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Medical

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Nutritional Inadequacies in Pregnancy Correlated With the Incidence of Anemia[1]

FRANK H. BETHELL, M.D., ELMIRA BLECHA, M.S., and JEAN HASTINGS VAN SANT, B.S.

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THE important advances which have taken place during the past fifteen years in our understanding of nutritional needs and of the factors which govern the formation of the cells of the blood have led inevitably to an appreciation of the close relationship of these two fields of study. Optimal nutrition may be said to prevail when the metabolic processes of the body receive, in correctly graduated amounts, those nutrient substances which are required for their most efficient functioning. As a corollary, faulty nutrition may be defined as a state of physiologic and structural derangement induced by an imbalance between demand and supply.

The most prevalent, and from a therapeutic standpoint, the most important anemias are those which result from inadequate provision of the substances needed for blood formation. Some of these materials are derived directly from the ingested food; others, such as the "liver principle," undergo intermediate metabolic change before being utilized in the manufacture of blood cells. Substances supplied by the diet and required for blood formation include amino-acids, minerals, especially iron, some portions of the vitamin B complex, and possibly other vitamins, and a substance of unknown chemical composition, the "extrinsic factor" of Castle.

Nutritional inadequacies arise not only from a diet lacking in essential constituents, but also from failure to absorb or to utilize efficiently such substances, as a result of digestive disturbances or faulty metabolism. The latter group, not dependent primarily upon improper diet, have been termed "conditioned deficiencies." Defects of the diet itself are, of course, emphasized by such pathologic states and also by certain physiologic conditions. The latter include growth, menstruation, pregnancy and lactation, four causes of stress to which the same individual may be subjected in rapid sequence. The reproductive process induces the greatest physiologic strain which a living organism is called upon to undergo. Increasing dependence upon refined and concentrated foods, ignorance, caprice and economic necessity account for widely prevalent suboptimal nutrition which, in pregnancy, may progress to a state of clinical deficiency, thus adding pathologic complications to a physiologic process.

MATERIAL AND METHODS

At this time we wish to report some of the observations made during a field survey of dietary habits and hematologic values of pregnant women carried out in two rural counties of Michigan.[2] Information was obtained by means of repeated interviews and blood examinations throughout gestation and for variable periods up to one year thereafter. The personnel consisted of two nutritionists and two medical technologists whose activities were devoted exclusively to the purposes of the study. The work was supervised and the results interpreted and evaluated by the senior author. The subjects were referred by their local attending physicians and no attempt was made at selection by criteria other than the duration of the pregnancy. For the most part the women were seen initially before the sixth month of pregnancy. The 484 subjects comprising the group studied represent about half of the cases of pregnancy occurring in the two counties during the period of investigation.

Nutritional and hematologic data were recorded on a series of forms. Figures 1 to 4 illustrate the method that was used. These forms were devised in 1938 and, at this time, certain revisions would appear desirable. Preliminary information obtained by the technician was entered on Form A (Fig. 1). Forms B and C (Figs. 2 and 3) were filled out by the dietitian. Although it is recognized that the reliability of the history method of diet analysis may

[1] A report of a dietetic and hematologic survey of pregnant women in a rural area, as read before the American Dietetic Association, Detroit, October 22, 1942.

[2] This project was undertaken under the auspices and with the financial support of the W. K. Kellogg Foundation of Battle Creek, Michigan.

be questioned on the ground of lack of precision and individual variations with regard to dependability, the interrogation is carried out by nutritionists whose efforts are devoted solely to this work. Records of

UNIVERSITY OF MICHIGAN
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FORM A

File No. 1815
Series No. 175

Name *E——— B———* Color *W* Birth Date *6/17/13*
Address *Route 5* Township *Fayette* County *Hillsdale*
Referred by *Dr. D———* Date *6/2/39* Address *Jonesville*
D.E.C. *12/29/39* Para *T* Kahn *Neg.*
History of anemia *Said to have had anemia after last confinement two years ago*

Medications previously taken for anemia *Received iron tablets for about two months after last confinement*

History of serious illness *None*

Complications of present pregnancy *Morning sickness for first two months, occasional glycosuria and proteinuria during last trimester*

Date of delivery *1/1/40* Blood loss at delivery *Not known*
Antenatal follow-up *8/22, 10/12, 12/4* Postnatal follow-up *2/16/40, 10/18*
Infant follow-up *5/13, 10/18*
Remarks *Iron medication taken from 7/1 to 12/30—6 months, no intolerance to medicine*

Final evaluation: *First seen at 4½ months of pregnancy. Diet then deficient all respects. Moderately severe hypochromic anemia. Received iron ℞ from 5th month until confinement. When seen in 9th month food intake values were in highest ranges; weight gains normal; blood count normal.*
Baby developed normally during first year of life, breast fed for 3 months, had no anemia.
Mother's health good at one year postpartum, weight normal, diet fairly satisfactory, blood values normal.

FIG. 1

FORM B

File No. 1815
Series No. 175

Name *E——— B———* Color *W* Birth date *6/17/13*
Head of household *J———B———* (*husband*)
Address *Route 5* Township *Fayette* County *Hillsdale*
Referred by *Dr. D———* Date *6/2/39* Address *Jonesville*
D.E.C. *12/29/39* Para *T* Kahn *Neg.* Lactation *3 months*
Height *5′ 0″* Weight *126½* Standard wt. *121*
Pregravid wt. *125* Wt. other pregnancies *not known*
N. and V. this pregnancy *1st trimester* Other pregnancies *severe, throughout*
Do particular foods cause distress? *No*
Bowel function *normal* Cathartics *occasional cascara*
Date of delivery *1/1/40* Postnatal follow-up *2/16/40, 10/18*
Infant follow-up *5/13, 10/18*
Date of first visit *6/19/40* Economic status *Necessities, only*
Dates of subsequent visits: Progress notes

8/22—Wt. 130. Feels better. Receiving 1 qt. milk. 2 T. cod liver oil. Diet seems adequate except for thiamin. Taking iron ℞.
10/12—Wt. 135. Continues in good health. Diet and cod liver oil as before. Still deficient in thiamin. Taking iron ℞.
12/4 —Wt. 144. Good health. Has increased consumption of whole grain cereals and bread. Taking iron ℞ and cod liver oil.
2/16—Postpartum (6 wks.) wt. 127. Baby's birth wt. 8 lb. 6 oz., breast fed with one feeding daily of evap. milk and corn syrup formula. Mother's diet essentially as before. Should increase milk and whole grain cereals, citrus fruits. Stopped iron ℞ after confinement, taking cod liver oil.
5/13—Baby's wt. 15 lb. 4 oz. Seems well. Receiving evaporated milk and corn syrup formula with orange juice and cod liver oil. No other supplements.
10/18—Mother's wt. 132. Feels well. Diet fairly satisfactory. Baby's wt. 21 lb. 8 oz. Has 2 teeth, does not creep, but seems quite strong.

(*over for baby's diet record*)

FIG. 2

it is unlikely, in our opinion, that careful and detailed questioning of patients in their own homes will lead to gross errors of interpretation, particularly when food intake kept by the subjects on special forms, as used by Ebbs and Moyle (1) and Williams and Fralin (2), are of undoubted value in the case of

selected subjects, but in a survey of a large number of women representing wide variations of education, intelligence and degree of cooperation the significance of the data thereby obtained is by no means uniform. Moreover, many subjects tend to increase their consumption of certain foods which they know are beneficial, particularly milk, when they are faced personally with the task of recording their intake.

A dietary summary and hematologic report with recommendations for therapy was sent to the referring physician after each patient visit (Fig. 4). It was the consensus of the physicians that diet instructions should be given to the patients by the interviewers. On the other hand, medicinal therapy was prescribed by the medical attendants. After the first visit subsequent interviews and blood examinations were made at approximately two-month intervals throughout the antenatal period. At these times the extent of adherence to diet instructions was determined, modifications of the diet were made as indicated, and a record was taken of anti-anemia therapy. Final evaluation of the status of nutrition and blood was made, in most cases, at the sixth to eighth week after confinement. Because of the influence of maternal health during pregnancy on the welfare of the infant and on the incidence of anemia during the first year of life (3, 4), observations of the blood of the babies were made at the fourth to sixth month and at the tenth to twelfth month. Blood examination of the mother was done at approximately one year after delivery in cases where anemia was found during pregnancy or at six to eight weeks postpartum.

Interviews in the home made possible a more accurate economic and social classification than can ordinarily be achieved in the clinic. Not only income but environmental factors, financial obligations, status of other members of the family, government or other assistance, and foods available at home were considered in classifying the subjects.

FORM C

File No. *1815*
Series No. *175*

Name *E———— B————* *6/19/40*

Number in family *3*
Cooking facilities *satisfactory*

Foods available at home

Meat
Poultry *yes*
Eggs *yes*
Cheese
Milk:
  Fresh *yes*
  Dried
  Canned
Vegetables:
  Canned *beans, peas, tomatoes*
  Fresh *in season*
  Dried
  Potatoes *yes*
Fruit:
  Fresh *berries*
  Canned *berries*
  Dried
Others *butter*
Amount spent for food *$3–$4 for family*

Summary

Milk *¾ pt. daily*
Meat *1 serving daily*
Eggs *1 daily*
Cheese *2 × week*
Beans, etc. *1 × week*
Peanut butter *0*
Fat *4 T day*
Salt *moderate*
Water *1 qt.*
C.L.O. (*cod liver oil or equiv.*) *0*
Vegetables:
  Cooked *3 × day*
  Raw *2–3 × week*
Fruits:
  Cooked *3–4 × week*
  Fresh *3–4 × week*
  Citrus *1 × day*
Cereal:
  Whole grain *0*
  White *0*
Bread:
  Whole wheat *0*
  White *3 slices daily*

Diet history

Breakfast:
  Fruits *4 oz. canned tomato or grapefruit*
  Cereal *0*
  Meat *0*
  Eggs *0*
  Bread *1 slice white with butter*
  Beverage *coffee with sugar and cream*
  Other *0*

Noon:
  Soup *0*
  Meat or substitute *beef, pork, veal, chicken*
  Potatoes *scalloped, mashed, fried*
  Vegetables
    Cooked *1 with butter*
    Raw *lettuce or celery 2–3 × week*
  Bread *1 slice white with butter*
  Dessert *fruit, fresh or canned, or pudding*
  Beverage *coffee or milk*

Night:
  Soup *2–3 × week*
  Meat or substitute *2 eggs or meat*
  Potatoes *warmed over*
  Vegetables
    Cooked *0*
    Raw *0*
  Bread *1 slice white with butter*
  Dessert *0*
  Beverage *½ pt. milk*
  Extras *not significant*

FIG. 3

Of the 484 women, 246 lived on small farms, 208 obtained milk from their own cows and 233 raised vegetables and canned them for winter use. Of the total group, 238 resided in small towns with a population of less than 6000. Ninety-two subjects enjoyed comparatively comfortable circumstances and were able to procure foods recommended without special effort or financial strain; 326 could obtain the necessities for adequate nutrition, although in most instances to do so required careful planning and

FORM D

File No. *1815*
Series No. *175*

Name *E——— B———* Address *Jonesville*
Referred by *Dr. D———*
Date expected confinement *12/29/39* Date of confinement———
Observation number *1* Date of observations *6/19/40*
Antepartum——— Postpartum——— Infant———

R.B.C. count *4,000,000*
Hemoglobin per cent *64*
Hemoglobin grams *10.0*
Hematocrit *34.0%*
Color index *0.86*
Mean corp. vol. *85 cubic microns*
Mean corp. hb. *25.0 micromicrograms*
Mean corp. hb. conc. *29.4%*
W.B.C. count *9000*
Stained film:
R.B.C. *Hypochromic*
W.B.C. *Normal*
Platelets *Normal*
B.G.N. ——
Retics. *2.8%*
Other ——
Differential:
P.M.N. *72%*
E. *2*
B. *1*
L.L. *8*
S.L. *11*
Mon. *6*

Summary of nutritional status

Pregravid weight *125* Deviation from ideal *+4 lb.*
Present weight *126½* Deviation from ideal *+2 lb.*

	EXCESSIVE	ADEQUATE	INADEQUATE	
			Slight	*Marked*
Calories *1800*			√	
Protein *66 g*				√
Calcium *1.03 g*				√
Phosphorus *1.609*				√
Iron *12.40 mg*			√	
Vitamin A *6000 I.U*			√	
Vitamin B_1 *1.1 mg*				√
Vitamin C *80.0 mg*			√	
Vitamin D ——				√
Vitamin G *1.65 mg*				√

Dietary instruction given: *Milk 1 qt. daily. Change to whole grain bread and add cereal. Increase raw and cooked vegetables. Take 2 T. cod liver oil daily.*
Outside aid recommended: *None necessary at present.*

Interpretation of hematologic data: *Hypochromic (iron deficiency) anemia—moderately severe. Blood otherwise normal.*
Therapeutic recommendations: *Iron, as ferrous sulphate, 0.32 gms. 3 × day. Patient has received dietary instructions.*
Treatment received:———

(signed)———M.D

FIG. 4

intelligent cooperation; 66 women, the majority town residents, were in severe economic straits and were unable to secure, by purchase or other means except public assistance, the basic foods required to meet even minimum standards of adequacy for the nonpregnant adult.

It is our present purpose to express in quantitative terms, as accurately as possible, the nutritional status of our subjects, to correlate the incidence of anemia with specific dietary deficiencies, and to indicate the degree of dietary improvement which may be expected from a project of this type. Ordinary household measures were used in compiling diet records, and food values were calculated according to the tables of Bowes and Church (5). Our allowances for pregnancy were adopted before the recommendations of the National Research Council (6) were available, but the respective values are in close agreement. Weight classifications were based on Metropolitan Life Insurance Company tables for nonpregnant women, allowing a gain of three pounds during the first trimester, thirteen during the second, and nine during the third, a maximum total of twenty-five pounds during pregnancy, regardless of the normal pregravid weight. Hematologic determinations were made on oxalated venous blood employing a standard technique previously described (7). On the basis of erythrocyte count, mean volume and mean concentration of hemoglobin, the blood values were classified as normal or as manifesting anemia of

specific morphologic type, according to criteria published by Bethell, Gardiner and MacKinnon (8). Detailed reports of blood studies made in the course of this survey will be published separately.

RESULTS

The age distribution and parity of the subjects are given in Tables 1 and 2. The weight ranges and the average daily intake of essential food constituents by all of the women included in this survey, prior to their first interview, are presented in tabular form together with a comparison of the values recorded near the end of pregnancy in two groups differing only with respect to their having received or having failed to receive earlier dietetic instruction (Tables 3–13).

TABLE 1

Age distribution

YEARS	PER CENT
15–19	12.4
20–24	34.1
25–29	24.8
30–34	17.4
35–39	9.3
40–44	2.0
Total subjects	484

TABLE 2

Parity of subjects

PARA	PER CENT
0	40.3
1	25.9
2	15.3
3	7.0
4	4.6
5	2.3
6	1.3
7 or more	3.3
Total subjects	484

An analysis of weight variations observed in our subjects has been previously reported (9). A progressive increase in the percentage of overweight women with each pregnancy and with advancing years was demonstrated. Although attempts to correct deviations from the ideal weight range by dietary instruction were attended, during pregnancy, with considerable success, observations made one year after delivery showed a percentage increase for those who had been overweight. A share of the responsibility for weight gain after confinement must be assigned to physicians who frequently urge their patients to eat excessively with the object of increasing milk production.

TABLE 3

Weight ranges

	NORMAL RANGE	5–15% UNDER	MORE THAN 15% UNDER	5–15% OVER	MORE THAN 15% OVER	TOTAL SUBJECTS
	per cent	*per cent*	*per cent*	*per cent*	*per cent*	
Initial observation, all subjects	37.9	23.8	8.7	14.3	15.3	484
Uninstructed—near term	34.9	27.9	6.2	13.2	17.8	129
Instructed—near term	47.7	18.7	3.3	19.1	11.2	241

TABLE 4

Total protein intake per day

	OVER 79 GM.	79–60 GM.	59–40 GM.	BELOW 40 GM.	TOTAL SUBJECTS
	per cent	*per cent*	*per cent*	*per cent*	
Initial observation, all subjects	16.9	37.9	37.5	7.9	484
Uninstructed—near term	17.1	35.6	39.6	7.7	129
Instructed—near term	46.9	45.6	7.1	0.4	241

TABLE 5

Animal protein intake per day

	OVER 49 GM.	49–30 GM.	BELOW 30 GM.	TOTAL SUBJECTS
	per cent	*per cent*	*per cent*	
Initial observation, all subjects	32.2	48.1	19.6	484
Uninstructed—near term	29.5	49.5	20.8	129
Instructed—near term	70.1	27.4	2.5	241

TABLE 6

Iron intake per day

	OVER 15 MG.	15–12 MG.	11–8 MG.	BELOW 8 MG.	TOTAL SUBJECTS
	per cent	*per cent*	*per cent*	*per cent*	
Initial observation, all subjects	2.5	30.8	53.3	13.4	484
Uninstructed—near term	0.8	24.0	60.5	14.7	129
Instructed—near term	4.2	64.3	29.0	2.5	241

All of the food materials listed in the recommendations of the National Research Council are included

in the tables with the exception of niacin, to which special attention was not being given at the time of the institution of the survey in 1938. Particular emphasis was placed on the quantity of protein obtained from animal sources, since it is well recognized that a high intake of total protein may be associated with deficiencies in essential amino-acids.

The incidence of anemia among all the subjects was 123 cases or 25.4 per cent. The role of iron deficiency in causing hypochromic anemia, characterized by low color and saturation indexes, is thoroughly established. Although, in adults, a low food intake of iron is not generally an important cause of anemia, an exception must be made in the case of pregnant women with their increased requirements. Moreover, pre-existing stores of iron are essential to meet these added needs. Therefore it is the quantity of iron consumed before conception that largely determines later evidences of its deficiency. The relation of the food iron intake of the subjects to the

TABLE 7

Calcium intake per day

	OVER 1.5 GM.	1.5–1.2 GM.	1.1–0.7 GM.	BELOW 0.7 GM.	TOTAL SUBJECTS
	per cent	*per cent*	*per cent*	*per cent*	
Initial observation, all subjects	10.7	25.0	38.1	26.2	484
Uninstructed—near term	12.4	23.3	38.7	25.6	129
Instructed—near term	22.8	55.2	15.8	6.2	241

TABLE 8

Phosphorus intake per day

	OVER 1.6 GM.	1.6–1.3 GM.	BELOW 1.3 GM.	TOTAL SUBJECTS
	per cent	*per cent*	*per cent*	
Initial observation, all subjects	27.8	48.4	23.8	484
Uninstructed—near term	27.9	51.2	20.9	129
Instructed—near term	61.0	33.2	5.8	241

TABLE 9

Vitamin A intake

	ADEQUATE (9000 + I.U.)	MODERATE DEFICIENCY	SEVERE DEFICIENCY	TOTAL SUBJECTS
	per cent	*per cent*	*per cent*	
Initial observation, all subjects	15.3	56.5	26.2	484
Uninstructed—near term	9.3	72.1	18.6	129
Instructed—near term	70.1	21.6	8.3	241

TABLE 10

Vitamin D intake

	ADEQUATE (800 + I.U.)	MODERATE DEFICIENCY	SEVERE DEFICIENCY	TOTAL SUBJECTS
	per cent	*per cent*	*per cent*	
Initial observation, all subjects	10.3	11.4	78.3	484
Uninstructed—near term	7.8	8.5	83.7	129
Instructed—near term	66.4	10.0	23.6	241

TABLE 11

Ascorbic acid intake

	ADEQUATE (100 + MG.)	MODERATE DEFICIENCY	SEVERE DEFICIENCY	TOTAL SUBJECTS
	per cent	*per cent*	*per cent*	
Initial observation all subjects	3.1	42.4	54.5	484
Uninstructed—near. term	0.8	37.2	62.0	129
Instructed—near term	5.4	70.6	24.0	241

TABLE 12

Thiamin intake

	ADEQUATE (1.8 + MG.)	MODERATE DEFICIENCY	SEVERE DEFICIENCY	TOTAL SUBJECTS
	per cent	*per cent*	*per cent*	
Initial observation, all subjects	21.5	59.5	19.0	484
Uninstructed—near term	19.4	62.8	17.8	129
Instructed—near term	46.9	45.7	7.4	241

TABLE 13

Riboflavin intake

	ADEQUATE (2.5 + MG.)	MODERATE DEFICIENCY	SEVERE DEFICIENCY	TOTAL SUBJECTS
	per cent	*per cent*	*per cent*	
Initial observation, all subjects	52.1	38.2	9.7	484
Uninstructed—near term	47.3	42.6	10.1	129
Instructed—near term	82.5	15.0	2.5	241

incidence of hypochromic anemia is shown in Chart 1. A number of factors may contribute to the development of such anemia, but the evidence offered here suggests that, in pregnancy, dietary deficiency of iron plays a significant role in its causation.

The association of inadequate intake of protein of high biologic quality and anemia characterized by red blood cells of larger than normal size, fairly well

gestion of protein from animal sources, for example, being almost invariably associated with other nutritional inadequacies. However, such correlations are less positive than that between protein lack and macrocytic anemia, and previous clinical and experimental studies have indicated that diets deficient only in protein may lead to the development of such anemia (10, 11).

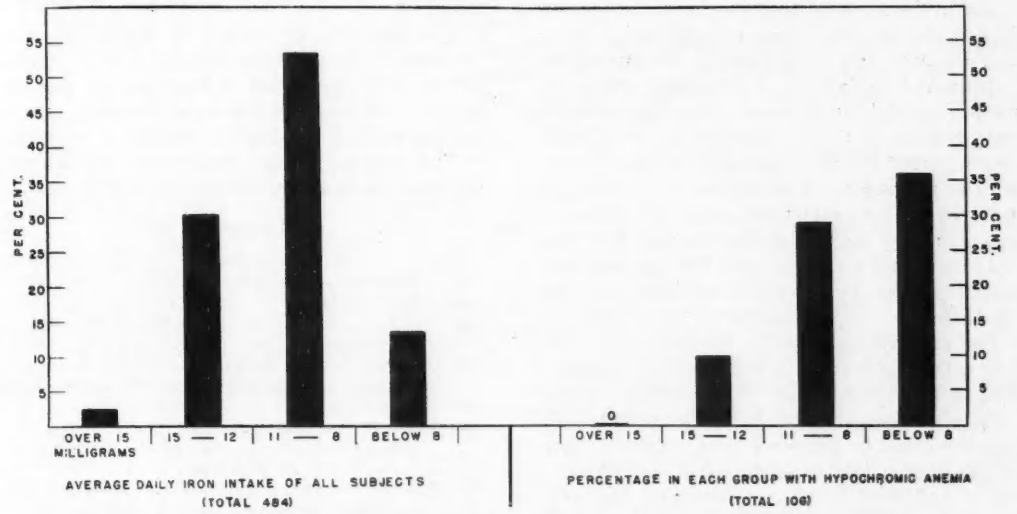

CHART 1. *The iron of the diet related to the incidence of hypochromic anemia in pregnancy*

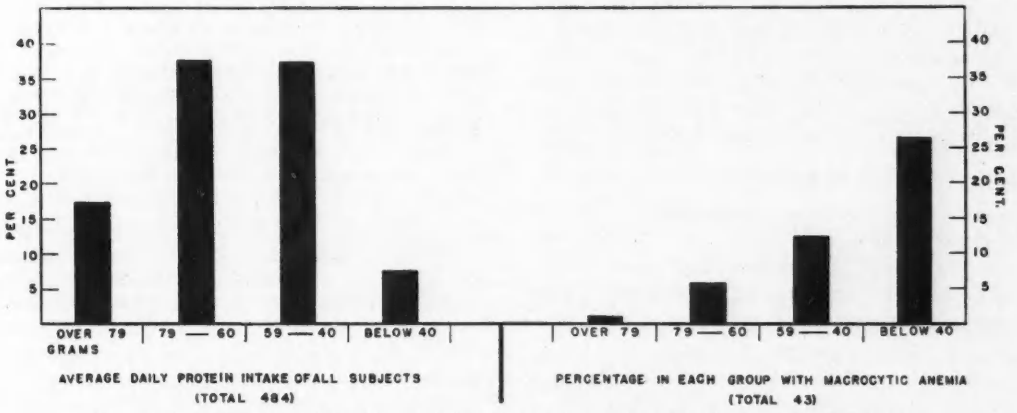

CHART 2. *The protein of the diet related to the incidence of macrocytic anemia in pregnancy*

filled with hemoglobin, has been pointed out in earlier publications (7, 8). Data tending to substantiate this relationship, obtained from the subjects of this survey, are presented in Chart 2. Correlations between the incidence of anemia and other essential components of the diet may also be established, since the diets of individuals are rarely deficient in but one or two respects, insufficient in-

DISCUSSION

The nutritional survey which forms the basis for the present report is similar in scope and method to the studies of Ebbs and Moyle (1) in Toronto and Williams and Fralin (2) in Philadelphia. Because most of the deliveries occurred in the homes, under the care of many physicians, no attempt could be made to correlate obstetric difficulties or maternal or

infant morbidity with nutritional or hematologic factors. Unlike previously reported surveys of this nature, our subjects were not residents of large urban centers, but lived on farms and in small rural towns. Prenatal clinics and specialized medical services were not locally available to them. On the other hand, environmental factors and economic status were generally superior to those of the women comprising the groups of the aforementioned investigators. Moreover, in the areas utilized for the study, county health departments had been exceptionally active and well organized, and awareness of the importance of nutrition and willingness to cooperate characterized the majority of the subjects. For these reasons, the diets, before restriction, were generally superior to those reported by Williams and Fralin. Nevertheless, the prevalence of suboptimal nutrition, as measured by present standards, and the degree of improvement after dietary instruction testify to the value of nutritional evaluation and therapy as a part of prenatal care for the population at large as well as for the distinctly underprivileged in large cities.

The cost of providing dietetic service in the home, together with examination of the blood, as a part of standard prenatal care, would be prohibitive. However, where hospital or clinic facilities are available, such services could be provided at an estimated individual cost of $5. Our experience has shown that if physicians and local health organizations recognize and emphasize its importance women will not only accept but demand nutritional guidance in pregnancy. It is certain that in the future adequate prenatal care will necessarily include dietetic instruction and competent evaluation of the status of the blood. To hasten the day when such services will be generally available is the duty of practising physicians, nutritionists and public health officials.

SUMMARY

The nutritional status and hematologic values of 484 pregnant women, residing in a rural area, were evaluated by means of interviews and blood sampling, carried out in the homes of the subjects. The economic and environmental conditions of the group were those of farming communities generally in the North Central States.

Although relatively few of the diets studied were critically deficient in any of the food materials considered, a correspondingly small number met present-day recommended allowances for pregnancy. Significant increases in the quantities of protective foods ingested followed dietary instruction, and were maintained by periodic re-evaluation and advice.

The incidence of anemia in the group was 25.4 per cent, and a positive correlation was established between the occurrence of hypochromic anemia and dietary deficiency of iron, and between macrocytic anemia and an inadequate intake of protein.

The need for dietetic instruction and hematologic examination in antenatal management is emphasized.

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Physical Differences at Birth

It thus appears that at birth there is no such thing as physical equality; that in a given racial group the new borns of one sex delivered to mothers of the leisure class, or at least those who are well nourished, are larger and more developed than those born to working-class and poorly nourished mothers. In how far the fetal weight can be controlled through the mother's diet is not fully established, but it appears that Nature governs the process so as to insure within hereditary limits the birth of reasonably normal children.—*Stewart, T. D.: Food and Physique, The Annals of The American Academy of Political and Social Science, January 1943.*

Nutritional and Dietary Inadequacies Among City Children From Different Socio-Economic Groups[1]

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ESTIMATES of the prevalence of dietary inadequacies and malnutrition among the general population, while varying widely in the incidence reported by different investigators, have been in general agreement in showing that they are of frequent occurrence (1). A health survey by the Elizabeth McCormick Memorial Fund of a large number of urban children from relief and nonrelief families adds to the growing body of evidence on the urgent need for improvement of the nutrition and food habits of the American people.

This paper, the second in a series of reports from the McCormick Fund survey (2), presents results from physical examinations and individual diet records on the prevalence of certain signs of nutritional deficiency among children in a large metropolitan area. The survey[2] extended over two and a half years, from January 1939 to August 1941, and included 7363 children from 3922 families representing different national and racial groups and a wide distribution of economic and social conditions in the city of Chicago.

The families were residing in 45 different neighborhoods well-scattered over the city. Some of the best and some of the poorest sections in Chicago were included. The best areas were residential sections and the poorest were congested commercial and manufacturing districts. Areas were classified as "Poor," "Fair," "Fair to Good," "Good," and "Very Good" districts, based on information available from census data, recreational surveys of the city, and health data from the files of the city health department.

The income levels of the family ranged from relief status to annual incomes in excess of $10,000. Socio-economic status was classified into two broad categories, as relief and nonrelief, and subdivided according to incomes of the family and the cultural and social conditions of the neighborhoods in which they resided.

Families that were receiving financial assistance from private or public agencies formed the relief group. The principal sources of relief were city and county public agencies and a large private agency.

Families that were on a low wage scale or had histories of irregular or seasonal employment were described as nonrelief, marginal class. Their annual incomes were less than $1,200.

Families whose incomes were in the average or upper brackets were described as nonrelief, economically independent class. These were mainly families of skilled wage earners and of business and professional workers.

Contacts with the families were channelled through public schools, settlements, and family agencies in the selected areas. All families having school-age children who lived within a specified distance from the examining center for the neighborhood were given the opportunity to have their children examined.

The children ranged in age from 2 to 18 years. With few exceptions they were American-born. Approximately three-fourths of the group were white (36 per cent of native parentage), 19 per cent were Negro, and 5 per cent Mexican. Among those of foreign parentage the largest national groups in order of frequency were: German, Italian, Polish, Irish, English-Scotch-Welsh, Scandinavian, and Russian.

Sources of the health data were medical histories, physical examinations, and individual diet records. The data were gathered under the personal super-

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[2] Assistance in the collection and analysis of a large part of the data for this report was given by the Work Projects Administration (O.P. 65-1-54-2334).

vision of nutritionists. Nine pediatricians participated in the study.

For further details on methods of selection, description of families, and procedures employed, the reader is referred to the earlier report (2).

Criteria of nutritional failure used in this study were: (a) the occurrence of certain physical abnormalities noted by the pediatrician which suggest early deficiency states; and (b) dietary patterns which indicate a low consumption of protective foods.

PHYSICAL SIGNS SUGGESTIVE OF NUTRITIONAL INADEQUACIES

It is recognized that at present there are no physical signs which can be accepted as diagnostic of early nutritional failure (3, 4), but certain conditions, particularly when they appear in combination, can properly be taken as highly suggestive of an unsatisfactory nutritional state. Among these conditions are insufficient fat padding, poor muscle tone, pallor, bad posture, rachitic chest deformities, defects of the extremities, certain skin abnormalities, and dental caries.

TABLE 1

Frequency of certain physical signs suggestive of poor nutrition among 7363 children in Chicago*

NUMBER OF DIFFERENT PHYSICAL SIGNS	PERCENTAGE OF CHILDREN HAVING SPECIFIED NUMBER OF SIGNS OF POOR NUTRITION			
	Total (7363)	White (5687)	Negro (1368)	Mexican (308)
None	6.4	6.7	5.1	6.9
1–2	33.9	35.5	27.1	34.7
3–4	32.0	32.2	30.0	37.4
5–6	19.5	19.4	20.4	17.1
7 or more	8.2	6.2	17.4	3.9

* Dental caries, bad posture, round shoulders, poor muscle tone, insufficient subcutaneous fat, poor color, rachitic chest abnormalities, bow-legs, and flat feet.

Estimations of the prevalence of nutritional deficiencies among the children included in the survey are based on a composite of certain physical signs which have been recommended for the recognition of early nutritional failure (3, 4), and on ratings by the physicians indicating a definitely unsatisfactory physical condition.

Physical Signs in Combinations. Gross anatomical manifestations suggestive of poor nutrition were of frequent occurrence among the children examined. Exclusive of dental abnormalities, only 14 per cent were free from the types of physical deviations previously referred to and 5 per cent exhibited most of them. The conditions noted most frequently were: abnormalities of the extremities 45 per cent, bad posture 44 per cent, rachitic chest deformities 34 per cent, poor muscle tone 26 per cent, deficient fatty tissue 26 per cent, and pallor 20 per cent. Among a large proportion of the children (60 per cent) two or more of these manifestations in addition to dental caries were observed; among 8 per cent, at least seven of them.

A brief summary of the frequency of these defects in combinations is given in Table 1. Percentages are shown for the total group examined and for white, Negro, and Mexican children separately.

Comparisons of Negro with white children reveal the less satisfactory condition of Negro children. Both singly and in combination, signs of nutritional deficiencies occurred more frequently among the Negro than among either the white or Mexican children. Reference to Table 1 will show that differences were particularly large with respect to children having numerous defects, 17 per cent of the Negro as compared with 6 per cent of the white and 4 per cent of the Mexican exhibiting at least seven of the signs.

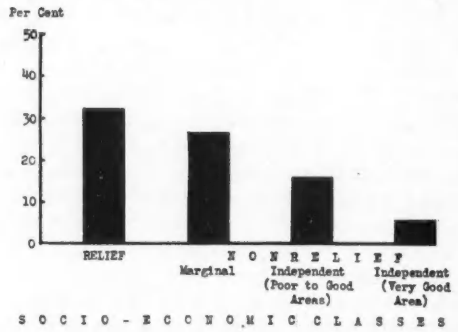


FIG. 1. *Percentage of white Chicago children exhibiting many signs of poor nutrition according to different socio-economic classes*

There is evidence of a relation between the nutrition of the children and the socio-economic level of the family. Throughout the health data on white children a consistent and direct association of physical condition with socio-economic class is apparent. Among Negro children some exceptions to this trend were noted, children from the marginal class often being in poorer condition than those in the relief class.

When the composite of five or more of the physical signs considered as suggestive of nutritional deficiencies is taken as an indication of poor nutrition, the results for white children show a progressive increase in incidence from the highest socio-economic level to the lowest. Percentage frequencies at the different levels were as follows: in the economically independent class—"Very Good" area 6 per cent, "Good" to "Poor" area 16 per cent, total class 13 per cent; in the marginal class, "Good" to "Poor" areas 27 per cent; in the relief class 34 per cent.

A graphic presentation of these results is given in Figure 1. The graph indicates the proportion of

white children from a relief group and from three nonrelief groups who exhibited many signs suggestive of poor nutrition.

Differences between white and Negro children were large among the nonrelief groups but small and statistically unreliable at the relief level. However, signs of nutritional inadequacies were of frequent occurrence among both white and Negro children at all socio-economic levels, the frequencies varying according to the number of different physical signs used as the criterion of poor nutrition. The frequencies for those exhibiting three or more signs were: independent—white 44 per cent, Negro 59 per cent; marginal—white 59 per cent, Negro 86 per cent; relief—white 68 per cent, Negro 67 per cent. The figures for those having seven or more signs: independent—white 2 per cent, Negro 19 per cent; marginal—white 6 per cent, Negro 32 per cent; relief—white 9 per cent, Negro 14 per cent.

Ratings Indicative of Poor General Condition. At the completion of an examination the physician described his impression of the child's physical condition in terms of a five-step rating scale. These ratings were based upon information from the medical history and symptoms reported, as well as on observations made by the physician at the time of examination. Forty per cent of the children were described by these ratings as in an unsatisfactory or very poor condition.

Low ratings showing a poor condition occurred most frequently at the relief level, and least often in the highest socio-economic group. The proportion of children in poor condition decreased progressively from the relief class to the upper income level. Frequencies from the lowest to the highest level were respectively: 48, 45, 25, and 13 per cent.

The interrelation of socio-economic status with physical condition is indicated in Figure 2 in terms of the frequencies of poor condition in four different socio-economic groups. The lowest socio-economic group includes 4200 children from families who were receiving financial assistance from public or private agencies. Nonrelief families are represented at three different levels—marginal, economically independent from "Poor" to "Good" sections of the city, and those from a "Very Good" residential neighborhood. Economically, socially, and culturally this very good area was above the average. In the marginal group there were 720 children; in the independent from "Poor" to "Good" areas 1556; and in the highest income group 565.

Differences between the socio-economic groups were large and statistically significant. Reference to the pictogram will show that while the health picture of no group was satisfactory, at the lowest levels it was very unsatisfactory.

INADEQUACY OF DIET PATTERNS

Dietary deficiencies have been termed the first link in nutritional failure. Food consumption and nutritional status are unquestionably interrelated. An essential part of this health survey was concerned with the dietary practices of the children included in the investigation.

In conferences with the mother a record was obtained of the child's weekly consumption of food, together with information on his food dislikes, food preferences, between-meal eating, and any special eating problems. The record indicated the variety of foods eaten and the number of times each type of food was served to the child—whether raw, cooked, or in combination with other foods. All information relating to dietary practices was obtained by staff nutritionists or by trained workers under their direct supervision.

Emphasis was placed on the assortment of foods included in the child's daily diet and whether or not

Each symbol represents 10% of the specified socio-economic class.

FIG. 2. *Frequency of ratings indicative of poor general condition among Chicago children from different socio-economic classes*

the foods essential for good nutrition were eaten regularly. Size of servings was not estimated.

Evaluation of the diet pattern was based on the number of weekly servings of the protective foods: milk; fruits and vegetables; meat, fish, poultry, and eggs. The food record included information on cereals, but no attempt was made to summarize the data, since it was extremely unlikely that the cereals or bread consumed contributed in any marked degree to the protective value of the diet. At the time of this study, enriched flours and breads were not as yet on the market and it can be safely assumed that the consumption of the whole grain products by this group was probably no better than that of the country as a whole (5).

The weekly intake of milk and eggs was determined from the amounts of these foods eaten daily by the

child and from information on the quantity of milk (in its various forms) and the number of eggs used weekly by the family.

Consumption patterns of protective foods were classified in terms of five levels of adequacy (Table 2). These levels were an adaptation of the four diet plans outlined by the U. S. Department of Agriculture (6) as: liberal diets, moderate-cost diets, minimum-cost adequate diets, and restricted diets for emergency use. The fifth level was classified as "below restricted."

It is recognized that there are definite limitations inherent in records obtained through the interview method used in this survey. For purposes of determining whether the child's diet regularly includes the kinds of foods necessary for growth and health, this method in the hands of skilful interviewers is considered by the McCormick Fund's nutrition staff

TABLE 2

Diet levels in terms of weekly consumption of protective foods

	MILK	FRUITS AND VEGETABLES, INCLUDING POTATOES	MEAT, FISH, POULTRY, EGGS
	quarts	*number of servings*	*number of servings*
Liberal diet	More than 7	39 and over	12 and over
Moderate adequate	7	31–38	9–11
Minimum adequate	5¼–7	24–30	7–8
Restricted for emergency use	3½–5	18–23	3–6
Below restricted	Less than 3½	Below 18	Below 3

to be reasonably satisfactory. By such means it is possible to obtain general information on the food habits of a large number of individuals.

The standard of adequacy used in this study is lower than that recommended for good nutrition by the Committee on Food and Nutrition[3] of the National Research Council. Food consumption analyses were well under way before this report was released. Diet patterns were considered adequate if the weekly consumption of the protective foods included 5¼ quarts of milk; 24 servings of fruits and vegetables, including potatoes; and 7 servings of meat, fish, poultry and eggs.

Among the 7363 children whose food habits were studied, the diets of only 28 per cent met this minimum standard. Wide differences were noted in the diet patterns of the white and Negro children, and those of native-white and foreign parentage. Among the urban Negro and Mexican children, few, in fact only 11 per cent of the Negro and 7 per cent of the Mexican, were getting even a minimum adequate diet as here defined.

[3] Now Food and Nutrition Board.

Relatively more of the native-white than of the foreign and mixed groups were found to have adequate diets, but less than half of any national or racial group were on diets considered adequate. Among white children, the diets of 59 per cent of those of native parentage, 73 per cent of mixed parentage (one parent foreign-born) and 75 per cent of those of foreign parentage failed to meet the minimum standard.

Dietary inadequacies were common among children of all ages. The frequency of diets which met the standard is shown for the different age levels in Table 3. At no age were the diet patterns of more than one-third of the children classed as adequate.

There was little variation in the proportions having adequate diets at the different age levels among relief families. Frequencies ranged from 9 per cent among children under 5 years of age to 5 per cent among those over 14 years of age.

TABLE 3

Frequency of adequate diets among Chicago children of different ages

AGE LEVELS	TOTAL NUMBER OF CHILDREN	CHILDREN HAVING ADEQUATE DIETS	
yrs.		*number*	*per cent*
2–4	482	119	24.7
5–9	2882	922	32.0
10–14	3163	800	25.3
15–19	336	47	14.0
Total	6863	1888	27.5

Among nonrelief families, although adequate diets were more frequent at all ages than among relief families, dietary inadequacies were prevalent throughout the age range included in the study. Consumption patterns of the youngest children and the oldest were less satisfactory than those of the 5 to 14-year-olds. Diets of approximately two-thirds of the children under 5 years of age (63 per cent) and over 14 years of age (63 per cent) were below the minimum adequate level, as compared with 45 per cent at the 5 to 9-year level and 51 per cent at the 10 to 14-year level.

That the adequacy of the diet is to a large extent determined by the income level of the family has been well established (5, 7). The results of the present survey give further evidence of this relationship, but they also indicate the importance of knowledge of food values in planning the family meals.

Need for improvement of the dietary was widespread and progressively more in evidence as the economic status of the family became lower. Even among families financially able to provide their children with adequate food, the diets of at least one-third of the children were classed as inadequate.

Figure 3 presents graphically the proportion of white and Negro children from four different socio-economic groups whose diets met the minimum adequate standard used in this study. Comparisons between 2536 children of native-white parentage, 2327 of foreign parentage, and 1375 of Negro parentage are indicated. The range is from 5 per cent among the Chicago Relief Administration Negro children to 67 per cent of the economically independent of native-white parentage.

Racial differences in the consumption patterns were observed in each socio-economic group, but were most marked at the higher levels. Variations between the different groups were large and consistent. Among the native-white parentage group the proportions whose diets met the standard were from the lowest to the highest level respectively: 13, 20, 34, and 67 per cent.

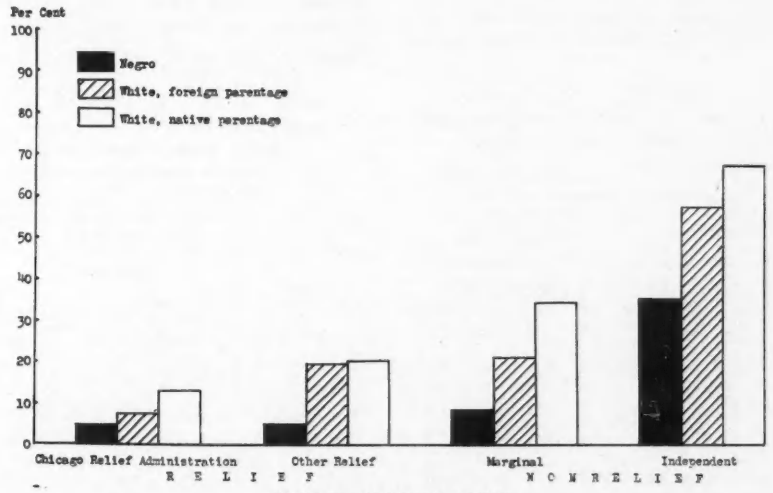


FIG. 3. *Adequate diets among 6238 Chicago children 1939–1941 by race, national origin, and socio-economic classes*

DIETARY PATTERNS BEFORE AND AFTER MARKED INCREASE IN FOOD BUDGET

Consumption patterns have been further explored through a comparative study of conditions before and after a marked increase in the family's food budget. The use of food stamps by the clients of Chicago Relief Administration provided the opportunity for this study. With the increased food budget and the impossibility of spending any of the allowance for commodities other than food, children from Chicago Relief Administration families should have had adequate diets.

The food stamp plan was introduced in Chicago in the late summer of 1940. During the winter and spring of 1941, 1197 children from Chicago Relief Administration families who were receiving food stamps were examined by the McCormick Fund. Most of the families had been on the higher food budget from 6 to 8 months at the time of the examination and diet survey. Of these children, 601 had been examined before the stamp plan. The others represent a new sample drawn from "Fair" and "Good" sections of the city.

As a means of controlling some of the selective factors that experience has shown operate in any follow-up investigation which must depend upon voluntary participation of the subjects, the opportunity for a health check-up was extended to children in Chicago Relief Administration families not previously examined by the Elizabeth McCormick Memorial Fund and who had been receiving food stamps. As a result, 596 children from 235 families, hereafter referred to as the control group, reported for the examination.

The examinations showed that on the whole, with respect to health problems and consumption of protective foods, the re-examined group of 601 children closely resembled the control group and appeared also to be representative of the large relief group previously examined. For example, before the use of food stamps the diet patterns of 3 per cent of the group of 601 cases from those previously examined and 5 per cent of the others in the original relief group had met the minimum standard. After the families had been on the stamp plan for six months, the proportion having an adequate diet was 20 per cent among the re-examined group and 21 per cent among the new control group.

Diets were compared by means of a ten-step rating scale devised by the nutrition staff. Rating I represented consumption patterns at the lowest level—

below the level of restricted diet for emergency use (6); Rating X, consumption at the liberal diet level. For clarity of interpretation these ratings were grouped into five classes: "Very Poor," "Poor," "Fair," "Good," and "Very Good." Classifications were based on the following criteria, each food group being given equal weighting:

Very Poor Diet: In which consumption of two or more of the protective food groups was below the level for emergency use.

Poor Diet: In which consumption of one of the food groups was below the level for emergency use.

Fair Diet: In which consumption of one or more of the food groups was at the level for emergency use, none below.

Good Diet: In which consumption of one or more of the food groups was at the minimum adequate level, none below.

Very Good Diet: In which consumption of all food groups was at the moderate adequate or liberal level.

TABLE 4

Diet patterns among white and Negro children from relief families before and after marked increase in food budget (stamp plan)

DIET CLASSES	PERCENTAGE IN SPECIFIED GROUP							
	White children				Negro children			
	Before stamps	After stamps			Before stamps	After stamps		
		Re-examined group	Control group	Total group		Re-examined group	Control group	Total group
	(382)	(382)	(498)	(880)	(182)	(182)	(84)	(266)
Very good...	0	2.9	4.4	3.8	.5	2.8	4.8	3.4
Good.....	3.4	16.1	16.3	16.2	2.2	20.0	17.8	19.3
Fair.....	36.2	56.5	57.3	56.9	40.7	53.9	54.8	54.2
Poor.....	46.6	21.4	19.0	20.0	46.7	21.1	21.4	21.2
Very poor....	13.8	3.1	3.0	3.1	9.9	2.2	1.2	1.9

The comparative findings clearly show an improvement in the diets following the increased amount of money, in the form of stamps, spent for food. "Poor" diets were less frequent and "Good" diets were more frequent after the food stamp plan than before. Before the issuance of stamps the diets of 59 per cent of the 601 children examined were in the "Poor" or "Very Poor" class; after the use of stamps this proportion was reduced to 23 per cent. The frequency of "Good" or "Very Good" diets changed from 3 to 20 per cent. Comparisons based on the ten-step rating scale indicate some improvement in the diet patterns of 68 per cent of the children. Marked improvement was noted in 30 per cent of the 601 cases, that is, a change of at least three scale steps, for example, from Rating I to IV, or V to VIII.

Classifications of the diet patterns of children from families receiving food stamps in 1941 are presented in Tables 4 and 5. In Table 4 results are given for white and Negro children having records before and after the stamp plan and for the control group that were first examined after they had been receiving stamps.

Table 5 summarizes the diet patterns of white children according to the nativity of their parents. In general, extent of improvement in the diet under the stamp plan was similar for these different racial groups. The proportions having good diets before and after the increase in food budget among children of native-white, foreign, and Negro parentage were respectively; 5 per cent *vs.* 25 per cent; 2 per cent *vs.* 14 per cent; 3 per cent *vs.* 23 per cent.

It is interesting to find that when the food budgets of the Negro and white families were the same, the diet patterns of the children were similar. Differences observed under cash relief were not observed under the food stamp plan. With the increase in food budget the diet patterns of most of the children

TABLE 5

Diet patterns among white children from relief families before and after marked increase in food budget (stamp plan) according to national origins

DIET CLASSES	PERCENTAGE IN SPECIFIED GROUP							
	Native parentage				Foreign and mixed parentage			
	Before stamps	After stamps			Before stamps	After stamps		
		Re-examined group	Control group	Total group		Re-examined group	Control group	Total group
	(174)	(174)	(304)	(478)	(208)	(208)	(194)	(402)
Very good...	0	4.7	3.9	4.2	0	1.5	5.2	3.2
Good.....	4.7	20.5	20.1	20.2	2.4	12.5	10.4	11.5
Fair.....	47.4	53.2	57.2	55.8	27.1	59.1	57.3	58.3
Poor.....	40.3	20.5	15.8	17.5	51.7	22.1	24.0	23.0
Very poor....	7.6	1.1	3.0	2.3	18.8	4.8	3.1	4.0

showed improvement but were still below even a minimum adequate level. Adequate food consumption would have been possible for all under the stamp plan. However, the records indicate that only 20 per cent of the diets were classed as "Good" and that 23 per cent were definitely "Poor."

Improvement in diet patterns was accompanied by improvement in weight status. After the food stamp plan, incidence of underweight tended to be lower among both white and Negro children. Underweight was now no more frequent among these children from relief families than among those from the highest socio-economic groups. The proportion in these groups whose weight status was at least 10 per cent below the standard weight for height, age, and sex (Baldwin-Wood tables) was as follows: among white children, 14 per cent in the food stamp group, 14 per cent in the highest socio-economic group; among Negro children, 20 per cent in the food stamp group, 26 per cent in the highest group.

Age for age, these children under the food stamp plan made larger gains in weight than the monthly rates commonly reported for well children (8, 9). The mean monthly gain in weight (without clothing) for boys was 0.78 lb., for girls 0.75 lb.

CONSUMPTION OF PROTECTIVE FOODS

Consumption of milk, fruits and vegetables, including potatoes, and of meat, fish, poultry and eggs was evaluated in terms of the five levels of adequacy previously described. Adequacy of consumption of these foods in the diets of white and Negro children and of the total number in the original survey is presented in Table 6. The relation of food intake pattern to socio-economic status is shown in Table 7. Six socio-economic classes are indicated: 3 nonrelief classes (marginal, independent from "Poor" to "Good" areas, and independent from a "Very Good" area) and 3 relief classes. Each relief group represents a different level of family income, varying according to the amount of the relief allowances of the different agencies.

TABLE 6

Consumption of protective foods in 1939–1941 among 6981 Chicago children in terms of different levels of adequacy

LEVELS OF ADEQUACY	WHITE (5319)	NEGRO (1316)	TOTAL* (6981)
	per cent	*per cent*	*per cent*
Fruits, Vegetables			
Liberal diet	9.5	2.3	7.7
Moderate adequate	14.5	5.8	12.3
Minimum adequate	16.7	10.1	15.2
Restricted for emergency use	26.8	27.6	26.8
Below restricted	32.5	54.2	38.0
Milk			
Liberal diet	8.0	4.7	7.3
Minimum adequate	58.5	46.3	55.3
Restricted for emergency use	18.6	26.3	20.5
Below restricted	14.9	22.7	16.9
Meat, Fish, Eggs			
Liberal diet	39.6	46.5	40.3
Moderate adequate	30.7	29.7	30.5
Minimum adequate	14.9	13.3	14.5
Restricted for emergency use	11.6	9.4	11.8
Below restricted	3.2	1.1	2.9

* Includes 346 Mexican children.

Inspection of Table 6 will show that dietary inadequacies were least often noted in the protein foods and most often in fruits and vegetables. The proportion whose diets included less than the minimum requirements of the different food groups, in order of frequency, was: for meat, fish, and eggs 15 per cent; for milk 37 per cent; for fruits and vegetables, including potatoes, 65 per cent.

Inadequate consumption of milk and of fruits and vegetables was more frequent among Negro than white children. Differences were particularly large with respect to fruits and vegetables. Relatively few of the diets of either the Negro or white children were deficient in protein foods, in fact for a large proportion consumption of this type of food was at the liberal diet level: among Negro children 47 per cent; white, 40 per cent.

TABLE 7

Consumption of protective foods in 1939–1941 among 5319 white Chicago children from different socio-economic classes, in terms of different levels of adequacy

LEVELS OF ADEQUACY	PERCENTAGE IN SPECIFIED CLASS					
	Relief			Nonrelief		
	Chicago Relief Administration		Relief other than CRA	Marginal	Independent (poor to good areas)	Independent (very good area)
	Before stamps	After stamps				
	(1646)	(880)	(810)	(534)	(1266)	(565)
Fruits, Vegetables						
Liberal diet	1.4	3.3	.7	5.2	17.2	37.9
Moderate adequate	3.5	6.6	9.6	16.0	22.7	41.1
Minimum adequate	8.0	16.1	20.3	21.6	23.7	14.5
Restricted for emergency use	25.0	39.5	37.9	32.3	25.2	4.5
Below restricted	62.1	34.5	31.5	24.9	11.2	2.0
Milk						
Liberal diet	5.3	11.4	4.6	4.8	7.2	20.7
Minimum adequate	46.8	59.3	52.0	52.4	74.8	71.0
Restricted for emergency use	22.5	23.0	28.4	20.3	10.8	7.2
Below restricted	25.4	6.3	15.0	22.5	7.2	1.1
Meat, Fish, Eggs						
Liberal diet	25.0	27.1	36.7	39.7	57.7	60.1
Moderate adequate	25.6	41.7	33.2	36.2	29.0	30.7
Minimum adequate	19.1	18.3	19.3	14.1	8.3	7.4
Restricted for emergency use	22.2	12.7	10.0	7.9	3.6	1.6
Below restricted	8.1	.2	.8	2 1	1.4	.2

It is evident from Table 7 that a direct relation is indicated between consumption level of the different food groups and socio-economic status of the family. In general, diet deficiencies occurred in all groups but were more prevalent at the lower levels. This relationship with purchasing power is particularly evident in the results with respect to fruits and vegetables. Frequencies of inadequate consumption

of these foods ranging from the lowest level, a relief group before the use of stamps, to the highest level were, respectively, 87, 74, 69, 57, 36, and 7 per cent.

Adequacy of the protective foods has been further examined by comparisons with the "yardstick" for good nutrition recommended by the Committee on Food and Nutrition of the National Research Council. Comparative results from relief and nonrelief groups based on this higher standard are shown in Table 8. The relief group represents Chicago Relief Administration white families for whom diet records were available before and after the food stamp plan. The nonrelief groups represent self-supporting white families from areas in the city described as "Poor," "Fair," "Fair to Good," "Good," and "Very Good." Results are given in terms of the percentage in each socio-economic class whose weekly intake of the different food groups

TABLE 8

Inadequate consumption of protective foods in diets of white children from relief families and nonrelief families in different types of community areas

BELOW YARDSTICK* FOR GOOD NUTRITION	PERCENTAGE IN SPECIFIED CLASS						
	Relief		Nonrelief				
	Before stamps	After stamps	Poor area	Fair area	Fair-good area	Good area	Very good area
	(382)	(382)	(122)	(465)	(381)	(277)	(565)
Fruits, Vegetables	99.7	97.1	98.4	78.1	68.0	56.0	39.5
Milk	40.1	29.5	35.2	19.8	13.6	12.3	8.0
Meat, Fish, Poultry, Eggs	42.0	26.7	14.8	12.5	11.5	10.1	9.5

* Recommended by the Committee on Food and Nutrition of the National Research Council.

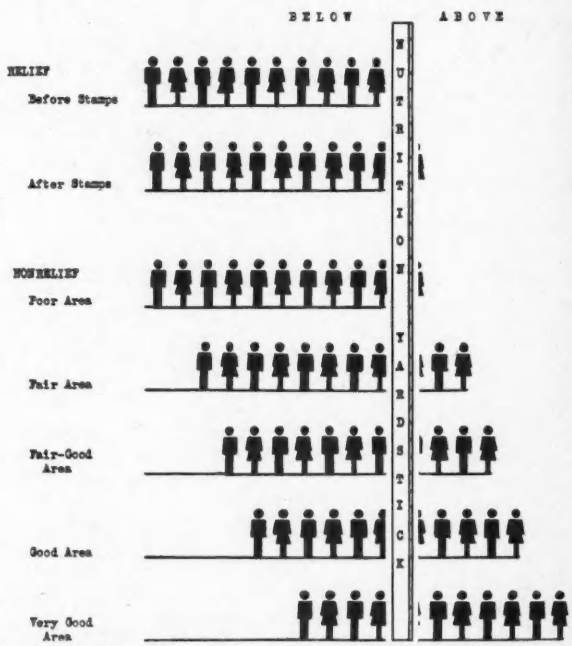
failed to meet the following standard of adequacy: milk 5¼ quarts; fruits and vegetables, including potatoes, 35 servings; meat, fish, poultry, eggs, 9 servings.

Table 8 shows that the diets were most deficient with regard to fruits and vegetables. Only in the better areas did the intake of these important foods approach the recommended allowance. With respect to milk it is apparent too that consumption was below the standard requirements for 20 to 40 per cent of the children from the poorer areas.

Milk consumption for the Chicago Relief Administration group before the food stamp plan (Tables 7 and 8) was heavily influenced by a change in policy at the end of the first year of the investigation when milk was delivered to relief families upon request—one quart for children up to seven years of age and one pint for children over seven. This practice markedly increased milk consumption of the children under the care of this agency. Of 900 Chicago Relief Administration children included in the first year of the study, 65 per cent were getting less milk than the minimum requirement for an adequate diet, as compared to 40 per cent in 1940 when milk was provided.

The seriousness of the problem of fruits and vegetables is pictorially presented in Figure 4. The diets of more than half of the children from the better areas were low in fruits and vegetables and in the poorer areas practically all diets were below the standard with respect to these foods.

Regardless of which of several criteria was adopted for determining adequacy, a large proportion of the



Each symbol represents 10% of the specified socio-economic class.

FIG. 4. *Inadequacies of fruits and vegetables in diets of white Chicago children from relief and nonrelief families 1939–1941*

diets fell below the standard in these foods. In the economically independent class the incidence of inadequate consumption of fruits and vegetables, including potatoes, according to three different standards, was as follows: 10 per cent were below the diet level restricted for emergency use; 31 per cent, below a minimum adequate level; and 62 per cent, below the yardstick for good nutrition.

SUMMARY

Physical examinations and dietary records of 7363 children from 3922 urban families representing a wide distribution of socio-economic conditions in Chicago, reveal a health picture far from satisfactory. A large proportion of the children ex-

hibited physical signs highly suggestive of early deficiency states and relatively few had an adequate dietary by even a low standard.

Results of the survey add to the growing body of evidence of the relationship between the socio-economic status of the family and the general health and diet patterns of the children. Nutritional and dietary inadequacies were relatively common among children from the relief class and were least frequent among children in the higher socio-economic groups. When the food budgets of the relief class were markedly increased and "frozen" in the form of stamps, improvement in the diet and large gains in weight followed. Adequacy of the diet patterns and general physical fitness of the children included in this survey were directly associated with size of the family pocket-book. However, other factors are clearly involved, as even with sufficient purchasing power many families failed to procure food adequate in kind and amount.

Briefly summarized, the major findings of the survey with respect to nutritional and dietary inadequacies were as follows:

1. Gross physical manifestations suggestive of poor nutrition were exhibited by 60 per cent of the children examined.

2. Signs of poor nutrition were observed more frequently among Negro than white children, the differences being particularly marked among children from self-supporting families.

3. Frequency of ratings indicative of poor general condition varied directly with socio-economic status, ranging progressively from 48 per cent at the relief level to 13 per cent at the highest level.

4. The diet patterns of 72 per cent of the children failed to meet even a low standard (minimum adequate diet level).

5. Dietary inadequacies were common at all ages. In no age group were the diet patterns of more than one-third of the children classed as adequate.

6. Inadequate diets occurred frequently in all socio-economic groups, but were most frequent at the relief level and least frequent in the higher groups—92 per cent at the lowest level, 41 per cent at the highest.

7. Definite improvement in the diet patterns followed a marked increase in the food budget (food stamps), frequency of good diets among a relief group changing from 3 per cent before the increase to 20 per cent six months after the increase.

8. Diets of Negro children were less adequate than those of white children—89 per cent of the Negro and 67 per cent of the white failed to meet a minimum adequate standard.

9. Dietary inadequacies were least often noted in the protein foods and most often in fruits and vegetables.

10. Consumption of fruits and vegetables, including potatoes, when compared with the yardstick for good nutrition, was found to be markedly low among both white and Negro children. The diets of 73 per cent of the white children were below the recommended allowances for fruits and vegetables, and in the poorest areas 98 per cent were below this standard.

The findings serve to show the extensiveness of the nutrition problem in a large metropolitan area and indicate the urgent need for effective community programs for health improvement.

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PLACEMENT OF PHYSICALLY HANDICAPPED

Under the necessity of compensating for wartime manpower shortages, the U. S. Civil Service Commission, central recruiting agency of the federal government, has conducted studies which show that thousands of jobs in industrial establishments of the government, such as arsenals and navy yards, can be filled by judicious placement of physically handicapped persons.—*Harvey, V. K. and Luongo, E. P. in J.A.M.A. 121: 100, 1943.*

Effect of a Supplementary Food on the Nutritional Status of School Children

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THE most striking conclusion of the nutritional survey conducted by the U. S. Department of Agriculture (1) was that half the people in this country had available only three-quarters of the minimum amount of money necessary for the purchase of a nutritionally satisfactory dietary. This study showed that a dietary was rarely good if it cost less than $2.50 per week and that usually a weekly expenditure of $8 to $9 was needed. But even at the $2.50 weekly level, 42.8 per cent of the families with 2; 65.9 per cent of the families with 3 to 4; 78.5 per cent of the families with 5 to 6; and 90.2 per cent of the families with 7 or more individuals, had incomes which would not permit this minimum expenditure (2).

Many suggestions have been made as to how this problem may be solved. Our current National Nutrition Program based on the milk-meat-and-vegetable theory is really addressed to the upper half of the population. Unfortunately, the lower half is economically unable to follow this excellent advice and this program evades and even intensifies the economic problem which demands a solution. Until solved the poor continue as subjects for food charity or remain in a malnourished condition.

In an attempt to meet this problem we have developed a series of food mixtures which would assure nourishment with the most critical dietary essentials at very low cost. A field test on one of these products, a dehydrated soup mixture, has been made by serving it in conjunction with hot school lunches. The results of this test are being reported at this time.

One hundred grams of this soup mixture contains 10 gm. skim milk powder, 30 gm. low-fat peanut flour, 30 gm. low-fat soya flour, 15 gm. precooked dry peas, and 15 gm. flavors, condiments, etc. The components of the soup are rich in good protein and in vitamins of the B complex. Supplemented with natural and synthetic vitamins and minerals, one ounce of the powdered soup diluted with one cup of hot water contains the approximate average daily allowances of all critical vitamins and minerals for children, based on the National Research Council recommendations (Table 1). Lower levels of vitamin intake can be obtained by serving the soup less frequently or by lowering the amounts of supplemental vitamins. Since it is mildly flavored, it should be tolerated even when eaten daily over many weeks. Precooked and ready to serve, it need not be subjected to the destructive effects of additional cooking. It also has the advantage of containing foodstuffs which are generally available in this country and it could therefore be used on a national or an international scale. Containing inexpensive ingredients, it can be supplied at a cost of 2 to 3 cents a portion. In addition, it may be used as a soup stock to which meats, vegetables or other foods may be added in the interest of greater variety in school lunch menus.

TABLE 1

Nutritive value of the test soup

	1 OZ. DRY WT.		1 OZ. DRY WT.
Protein	12.6 gm.	Thiamin	1.2 gm.
Fat	1.6 gm.	Riboflavin	1.8 mg.
Carbohydrate	8.5 gm.	Niacin	12.0 mg.
Calcium	1.2 gm.	Ascorbic acid	75.0 mg.
Iron	12.0 mg.	Vitamin D	400 I.U.
Vitamin A	4500 I.U.		

The field study was conducted on 760 children attending 6 schools in 5 rather small Michigan communities. This state was selected mainly because

[1] Presented before the American Dietetic Association, Detroit, October 22, 1942. Received for publication November 27, 1942.

[2] With the technical assistance of Georgiana Flour, A.B., Daisy Ingersoll, B.S., Estelle Putra, B.S., and Wilifred Rice, M.A.

Michigan is an "arsenal" state in terms of war production and because it was believed that the children in this area would be representative of the country as a whole with respect to economic and nutritional status. The data taken during the study showed that about thirty per cent of the children lived on farms and the remainder in villages (Table 2), and that they came from homes in which 32 per cent of the bread-winners were working in war production factories, 28 per cent were farmers and laborers, 27 per cent professional and tradespeople, and 13 per cent indigent.

TABLE 2

Distribution of subjects with regard to sex, age, etc.

TOTAL SUBJECTS	SOUP GROUP		CONTROL GROUP	
760	426		343	
	Sex			
	Male	Female	Male	Female
Number of subjects	217	209	174	169
Per cent of subjects	51.0	49.0	50.5	49.5

SOUP GROUP							
Age	7	8	9	10	11	12	over 12
Number of subjects	20	62	88	103	79	51	19
Per cent of subjects	4.7	14.8	20.9	24.4	18.7	12.1	4.5

CONTROL GROUP							
Age	7	8	9	10	11	12	over 12
Number of subjects	20	44	78	77	89	30	7
Per cent of subjects	5.8	12.9	22.9	22.5	23.4	10.5	2.1

	FARM	NON-FARM	FARM	NON-FARM
Number of subjects	150	274	96	243
Per cent of subjects	35.4	64.6	28.3	71.7

The physical status of each child was observed at the beginning and end of the study: the eyes were examined by biomicroscope (slit lamp) to observe changes related to vitamin A and riboflavin deficiency; the blood plasma was analyzed for ascorbic acid content and the blood for hemoglobin content. Blood samples were taken before breakfast. After breakfast was served, the child returned for his physical examination and biomicroscopic analysis.

All children received the regular school lunch during the entire period of the study. On the basis of the data obtained at the first examination the children were divided into two groups (referred to hereafter as soup group and control group) so that both would be alike as far as this was possible. The first received the test soup five times each week during the study, while the second served as a control. The ages ranged from 9 to 12 years, but the great majority of the children were 10 years old Because most of the children wanted to be in the soup group it was impossible to have the control group equally large, even though an ordinary soup was fed to the controls in several instances.

METHODS AND PROCEDURES

Physical Examination. These examinations were made by 8 physicians who had received training in the detection of nutritional deficiency lesions under Drs. Norman Jolliffe and H. D. Kruse. The examination included inspection of eyes, nose, throat, skin, mucous membrane, skeletal and neuromuscular reactions. To minimize the subjective effect, each child was examined by the same physician at the beginning and at the end of the study. Before and after the test period the height and weight of each child (unclothed) were recorded to the nearest quarter inch and quarter pound, respectively.

Blood Samples. A 7-cc. sample of blood from each child was taken from hemoglobin and plasma ascorbic acid estimations, immediately after arrival at the school. The subjects had been instructed not to consume any food that morning, not even fruit juice, and were fed a breakfast in the lunchroom after the blood sample had been taken.

The hemoglobin readings were made on a Coleman spectrophotometer 5 minutes after 0.1 cc. blood had been thoroughly mixed with 25 cc. 0.1 N hydrochloric acid in a 100-cc. volumetric flask and made up to volume with the same acid solution. The instrument was standardized by the blood oxygen capacity method (3).

The ascorbic acid content of the blood plasma was measured by a macromethod (4) using 2 cc. oxalated venous blood plasma and determining the optical density on the Coleman spectrophotometer.

Biomicroscopic Examinations. Kruse (5) has reported that biomicroscopy by means of a slit lamp is a "simple, convenient, objective method" for the detection of early avitaminosis A in surveys. In this study the code used for recording the slit lamp observation was that developed by Kruse. Particular attention is given to thickening of the conjunctiva, growing opacity of the conjunctiva, and vascularity. The four stages in the development of opacity plotted for the nasal and temporal regions of each eye were transparency, slight translucency, marked translucency and opacity. A marked thickening in the midline near the iris is noted in severe deficiency cases. These elevated yellowish areas (Bitot spots) can easily be observed on gross examination. The biomicroscopic examinations were made by one of us (E. W.) after a training period under Kruse.

DISCUSSION OF RESULTS

Soup Palatability. At the beginning of the study the soup formula contained calcium carbonate, no peas and a small amount of onion powder. It was chalky in texture and carried a flavor of soya which the onion and other condiments did not mask. Several children experienced difficulty in consuming the soup and most of those who dropped out of the soup group (Table 3) did so during this early period. Later, at the suggestion of the Bureau of Home Economics of the U. S. Department of Agriculture, precooked dehydrated peas were added to the formula and this masked a considerable part of the soya flavor while a combination of dicalcium phosphate with calcium carbonate minimized the chalky effect. The soup used during most of the experiment was a pea-flavored, thick purée soup, approximately as appetizing as an ordinary pea soup. It was observed that in most cases the children developed a taste for the soup as time went on. A similar observation has been made on adults. This and other preliminary studies have demonstrated how very important it is that any food item in a school lunch should have a familiar flavor. While there is really nothing disagreeable about soya flavor, many people object to it, possibly because it is unfamiliar.

TABLE 3

Tabulation of subjects discontinuing study

REASON LOST	NUMBER		% TOTAL GROUP	
	Soup	Control	Soup	Control
Illness	4	3	0.9	0.8
Moved	15	14	3.3	3.6
Dropped	11	12	2.4	3.1
Refused retest		11		2.8
Absent	2	4	0.4	1.0
Unaccounted for	2	5	0.4	1.3
Total	34	49	7.4	12.6

Eleven subjects dropped out of the soup group because of dislike for the soup (Table 3). This represents 2.4 per cent of the total group, a proportion only slightly larger than would dislike any ordinary food in the American dietary. Nearly all of the subjects were lost during the first two weeks when a less palatable soup was used. Furthermore, it should be noted that 23 subjects dropped out of the control group because of disinterest, and none from the soup group for the same reason.

It was interesting to note that the degree of success of the soup feeding in each school was directly proportional to the interest in the study shown by lunchroom operators and teachers. A teacher in each school kept a record of the soup consumption, and the absences and illnesses of each child. As the consent of the parents had been obtained before a child was included in the study, their interest also favorably affected the child's reaction to the soup.

Physical Examinations. The physical examination of the eyes, nose, and throat of the whole group showed approximately 22 per cent to have tonsillitis, 20 per cent rhinitis, 8 per cent pharyngitis, 4 per cent sinusitis and 3 per cent conjunctivitis (Table 4). The soup group showed a greater improvement in these conditions during the 3-month period but the difference could not be established as significant.

TABLE 4

Status of all subjects on first examination with regard to incidence of abnormalities

	per cent		per cent
Skin		*Mucous membranes*	
pallor	27.8	mouth	14.0
pigmentation	3.0	gums	3.6
seborrhea	8.7	tongue	3.1
dryness	35.1	lips	2.5
roughness	22.8		
hyperkeratosis	21.5	*Neuroskeletal systems*	
sebaceous physiognomy	17.2	cranial nerves	0.7
hypertrophy	1.0	ankle jerk	4.3
atrophy	0.0	knee jerk	2.2
ulcers	2.4	biceps jerk	1.0
fissures	5.7	muscle tenderness	2.6
acne	1.4	dysesthesia	2.3
hemorrhage	0.4	vibratory sense	8.3
		position sense	5.4
Eye, nose and throat		Babinski reflex	7.2
sinusitis	3.8	Romberg reflex	0.5
rhinitis	19.8	ataxia	0.7
pharyngitis	8.1	muscle atrophy	7.5
tonsillitis	21.6	pigeon chest	8.1
conjunctivitis	2.5	flared ribs	17.1
		rachitic rosary	3.8
Endocrinopathies		genu varum	4.4
pituitary	1.4	genu valgum	12.8
thyroid	2.2	pes planus	35.6

Dryness of the skin was observed in all areas, while roughness, pallor and follicular hyperkeratosis were noted chiefly on the extremities. Sebaceous plugs were seen mainly on the face. In both groups only slight improvement was noted in these conditions with the exception of skin dryness and this may have been related to the change in season, since the examinations were made in February and May.

Except for the gums, the mucous membranes were in relatively good condition. Nine per cent showed gum disorders, chiefly edema and hypertrophy, which showed little if any improvement on re-examination.

Abnormalities of the neuromuscular and skeletal systems were noted. As most of these were chronic,

one would not expect distinct improvements in a 3-month period, and none were noted.

In comparison with the control group, less subjects in the soup group lost weight and more gained weight. The average gain during the 3 months was 1.16 lb. for the control and 1.38 lb. for the soup group, an insignificant difference. The increase in height was the same for both groups.

Hemoglobin. On first examination the hemoglobin status was subnormal, for 9.0 per cent of all the subjects showed less than 10 gm., and 39.7 per cent were below 14 gm. hemoglobin per 100 cc. blood (Table 5). A level of 14.6 gm. per cent is said to be "normal" for children of this age (3).

At the end of the study, approximately 45 per cent of the subjects in the control group had blood values less than 14 gm. per cent, whereas 37 per cent of the soup group were below this level. A significant difference existed between the two groups at the end of the study. While the hemoglobin values of many of the children in the soup group were still low, there was a distinct improvement during the test period.

TABLE 5

Hemoglobin status at the beginning and end of the test period

GM. HEMOGLOBIN/100 CC. BLOOD	SOUP GROUP				CONTROL GROUP			
	No. of Subjects*		% of group		No. of Subjects*		% of group	
	First	Last	First	Last	First	Last	First	Last
4– 5.9	3	0	1.0	0.0	3	0	1.2	0.0
6– 7.9	2	1	0.7	0.3	5	0	2.0	0.0
8– 9.9	20	5	6.5	1.7	12	7	4.9	2.8
10–11.9	27	20	8.8	6.7	25	9	10.2	3.7
12–13.9	65	84	20.5	28.0	56	94	22.8	38.2
14–15.9	89	133	30.3	43.6	83	88	33.7	35.8
16–17.9	64	31	21.2	10.3	41	23	16.7	9.4
18 up	33	29	11.1	9.4	21	25	8.5	10.1
Totals.....	303	303	100.1	100.0	246	246	100.0	100.0

* Does not include entire subject group because of difficulty in obtaining either first or last blood sample.

Plasma Ascorbic Acid. At the first examination the ascorbic acid content of the blood (Table 6) was found to be below 0.5 mg. per 100 cc. in 50 per cent of the subjects and in 57 per cent it was below 0.6 mg., the level often adopted as a significant dividing line. Youmans (6) suggests that 0.4 to 0.7 mg. per cent constitutes the border zone of avitaminosis. Very recently, Kruse (7) has reported that persons with scorbutic gum lesions may show normal plasma ascorbic acid concentration but that plasma measurements reveal recent dietary habits with respect to intake of ascorbic acid. It would seem, therefore, that the plasma ascorbic acid measurement is a useful procedure in this type of study, since the acute condition would respond to treatment earlier than the chronic condition.

The plasma ascorbic acid status of both groups improved during the study but that of the soup group was much superior. While 43 per cent of the control subjects were still below 0.5 mg. per cent at the end of the study, only 18 per cent of the test subjects were below that figure and these, too, had shown improvement. A beneficial effect from the supplementary feeding on the ascorbic acid status (as measured in the blood plasma) was thus clearly demonstrated.

Vitamin A and Riboflavin. There is still debate as to the true meaning of biomicroscopic results with respect to vitamin A and riboflavin deficiency. With therapy of proper dosage prompt improvement takes place in the ocular manifestations of acute avitaminosis A and ariboflavinosis, but it appears that a very much longer period of continuous therapy, nearly a year to several years, depending on the stage, is necessary before the chronic manifestations are definitely alleviated. If these conditions disappear upon treatment it is reasonable to assume that they are abnormalities, even though they may be found in almost all the population. At the moment it seems reasonable to assume that these conditions are direct manifestations of past deficiencies in vitamin A and riboflavin.

TABLE 6

Plasma ascorbic acid status at beginning and end of the test period

MG. ASCORBIC ACID/100 CC. PLASMA	SOUP GROUP				CONTROL GROUP			
	No. of subjects*		% of group		No. of subjects*		% of group	
	First	Last	First	Last	First	Last	First	Last
0.00–0.09	25	1	9.3	0.4	32	13	15.6	6.3
0.10–0.29	45	13	16.7	4.8	37	35	18.0	17.0
0.30–0.49	63	35	23.4	13.0	33	41	16.1	19.9
0.50–0.69	31	53	11.5	19.7	29	34	14.1	16.5
0.70–0.89	39	51	14.5	19.0	29	36	14.1	17.4
0.90–1.09	24	55	8.9	20.4	15	23	7.3	11.1
1.10–1.29	18	36	6.7	13.4	14	11	6.8	5.3
1.30–1.49	12	10	4.5	3.7	11	10	5.3	4.9
1.50–1.69	7	5	2.6	1.9	2	0	1.0	0.0
1.70 up	5	10	1.9	3.7	5	3	2.5	1.5
Totals.....	269	269	100.0	100.0	207	206	99.8	99.9

* Does not include entire subject group because of difficulty in obtaining either first or last blood sample.

Upon first examination, less than one per cent of the entire group showed normal transparency in all areas of the eye, more than half the subjects showed marked translucency or worse and more than 2 per cent showed opacity, indicating rather severe vitamin A deficiency (Table 7). The right eye was

consistently more normal than the left but data taken on the "eyedness" of the subjects during the second examination showed no correlation. Curiously, also, the temporal area of the eye was more normal than the nasal area. Comparison of the data taken at the beginning and end of the test indicated that the vitamin A deficiency condition of both groups improved. As was to be expected in so short a study, no significant differences between the two groups could be detected.

TABLE 7

Biomicroscopic diagnosis of avitaminosis A before and after feeding period

AREA	OPACITY	SOUP GROUP				CONTROL GROUP			
		No. of subjects		% of total		No. of subjects		% of total	
		First	Last	First	Last	First	Last	First	Last
Right temporal	opaque	30	19	7.3	4.6	25	19	8.0	6.1
	>*slight translucency	258	243	63.1	59.5	186	184	59.5	59.0
	>transparency	408	408	99.7	99.7	311	311	99.7	99.7
	total	409	409	100.0	100.0	312	312	100.0	100.0
Right nasal	opaque	35	36	8.6	8.8	39	29	12.5	9.3
	>slight translucency	345	335	84.5	82.0	271	243	86.9	77.9
	>transparency	408	409	99.7	100.0	312	312	100.0	100.0
	total	409	409	100.0	100.0	312	312	100.0	100.0
Right eye	opaque	17	13	4.2	3.2	15	13	4.8	4.2
	>slight translucency	248	231	60.7	56.5	180	174	57.8	55.8
	>transparency	407	408	99.6	99.7	311	311	99.7	99.7
	total	409	409	100.0	100.0	312	312	100.0	100.0
Left temporal	opaque	31	26	7.6	6.4	20	17	6.4	5.5
	>slight translucency	266	271	65.1	66.3	208	213	66.7	68.3
	>transparency	409	408	100.0	99.7	310	312	99.4	100.0
	total	409	409	100.0	100.0	312	312	100.0	100.0
Left nasal	opaque	58	46	14.2	11.2	38	29	12.2	9.3
	>slight translucency	362	259	88.5	87.9	272	275	87.2	88.3
	>transparency	409	408	100.0	99.7	312	312	100.0	100.0
	total	409	409	100.0	100.0	312	312	100.0	100.0
Left eye	opaque	19	19	4.6	4.6	16	13	5.1	4.2
	>slight translucency	258	262	63.1	64.1	192	205	61.5	65.7
	>transparency	409	408	100.0	99.7	310	312	99.4	100.0
	total	409	409	100.0	100.0	312	312	100.0	100.0
Most severe in all 4 areas	opaque	8	7	2.0	1.7	10	9	3.2	2.9
	>slight translucency	201	196	49.2	47.9	146	150	46.8	48.1
	>transparency	407	407	99.5	99.5	309	311	99.0	99.6
	total	409	409	100.0	100.0	312	312	100.0	100.0

* > = more than.

In riboflavin deficiency the eye undergoes circumcorneal injection, visible under the biomicroscope as a congestion and proliferation of the limbic plexus and an invasion of the cornea by capillaries arising from the apices of scleral loops. As the lesion advances, the capillary projections anastomose to form "arcades." The degree of development of riboflavin deficiency is estimated by observing this capillary infiltration. Active cure is detectable from the rate of flow of blood through the capillaries and the appearance of "ghost" capillaries in the process of being resorbed. It is thought these ocular manifestations appear before most other signs of deficiency and therefore a technique for appraising riboflavin status can be based on observation of these eye conditions. Marked progress in the cure of these ocular lesions cannot be expected within 6 months since these structures are slow to resorb.

There is some reason for doubting that these mild abnormalities are specific for mild ariboflavinosis. Since most eyes show at least a first stage development of this condition there are those who contend

that this is "normal." Certainly if one labels as abnormal only those conditions in which all quadrants of the cornea show three or more arcades, one is less subject to criticism.

On first examination (Table 8) it was observed that 95 per cent of all the subjects exhibited two or more arcades, 53 per cent showed three or more arcades and 16 per cent showed four or more arcades *in all quadrants.* It seems evident that more than one-half of the subjects showed definite ocular manifestations of ariboflavinosis. As in the vitamin A observations, the right eye tended to be slightly more normal. Upon final examination there were

TABLE 8

Biomicroscopic diagnosis of ariboflavinosis before and after feeding period

LOCATION	ARCADES	SOUP GROUP				CONTROL GROUP			
		No. of subjects		% of total		No. of subjects		% of total	
		First	Last	First	Last	First	Last	First	Last
Right eye	more than 4	114	38	27.9	9.3	67	23	21.5	7.4
	more than 3	262	273	64.1	66.8	202	202	64.7	64.7
	more than 2	394	400	96.3	97.8	294	304	94.2	97.6
	more than 1	409	409	100.0	100.0	311	312	99.7	100.0
	total	409	409	100.0	100.0	312	312	100.0	100.0
Left eye	more than 4	106	40	25.9	9.8	72	17	23.1	5.5
	more than 3	267	271	65.3	66.3	206	201	66.0	64.5
	more than 2	396	402	96.9	98.3	299	303	95.8	97.2
	more than 1	407	409	99.6	100.0	312	312	100.0	100.0
	total	409	409	100.0	100.0	312	312	100.0	100.0
Both eyes	more than 4	70	19	17.1	4.6	42	9	13.4	2.9
	more than 3	213	220	52.1	53.9	169	154	54.2	49.4
	more than 2	394	395	96.3	96.7	287	298	92.0	95.5
	more than 1	407	409	99.6	100.0	311	312	99.7	100.0
	total	409	409	100.0	100.0	312	312	100.0	100.0

evidences of improvement in both groups, and slightly more improvement in the soup group, but the difference in the two groups was not significant. Interestingly, the most improvement was shown in those subjects classified with four or more lesions. Perhaps this is evidence that the more severe conditions are the more acute. On the other hand, this may be because the layers of capillaries become less numerous as invasion of the cornea proceeds. Milk consumption data showed no correlation with the severity of riboflavin lesions.

Practical Values of This Type of Food. This soup, developed for use in feeding population groups economically and effectively, is not intended for public sale and consumption. The Federal School Lunch Program was initiated in an effort to find a useful outlet for surplus foods. Because the foods which were surplus at any one time seldom combined to make a balanced lunch, an effort was made to supplement the surplus foods with other foods purchased by the local school authorities. This procedure has met with questionable success in localities without personnel qualified to make the food selection. More important, the funds available for this purpose were least where the need was greatest.

The school lunch experiment on the whole, however, has been very successful. But if it is to become a permanent function of our Federal Government, this program must not be dependent upon the vagaries of food surpluses; rather should it be designed to feed children effectively. If in doing this the surplus foods can be absorbed, a double benefit will result.

The children in the present study had been receiving a hot school lunch for several years. Yet nearly all of them were malnourished when first examined. This may be taken as evidence that the hot school lunch is *not* complementing the home in feeding the child. Possibly we should reappraise the program and determine whether it cannot be made effective. It was recently shown (8) that the nutritional status of many children is so low that the school lunch should contain as much as 90 per cent of the daily needs of vitamins and minerals. In 1941 the Board of Education in England (9) set up standards requiring that the midday meal in schools should contain one-third of the daily caloric requirements and most of the necessary vitamins and minerals. Our data indicate that school children are not well nourished and we suggest a supplementary food which will effectively solve the prob-

lem. The school lunch program can thus become a nutritional as well as an agricultural success.

The product used in this study, or similar preparations, should find considerable use in the postwar feeding of destitute populations. It requires a minimum of shipping space, does not call for elaborate packaging, is acceptably palatable and very inexpensive.

SUMMARY

An enriched protein soup powder so constituted as to contain the day's allowance of vitamins and minerals in one serving for a 12-year-old child has been developed. That this type of soup is acceptable to children as a part of the school lunch, is indicated by the fact that a total of 426 children consumed it daily for 3 months and showed little or no evidence of tiring of it.

A low nutritional status was found in this group of school children selected as representative, when examined in February in Michigan: the hemoglobin of 39.7 per cent was less than 14 gm. per 100 cc. blood ("normal" is 14.6 gm. per cent); the ascorbic acid of 50 per cent was less than 0.5 mg. per 100 cc. blood plasma (normal is 0.7 mg. per cent); the eyes of over 50 per cent showed marked translucency or opacity, indicating avitaminosis A ("normal" eyes are transparent). Finally, 53 per cent showed three or more arcades indicating ariboflavinosis (one or no arcades is "normal"). Many of the children showed abnormalities of the skin and mucous membranes, the results of multiple vitamin deficiency disorders.

Since 32 per cent of the parents of these children were working in war industries at moderately high wages, and since 32 per cent of the children lived on farms and the remainder in small communities, the subjects of this study may have been above the average of American school children in economic status and environment. One would expect, therefore, that the nutritional status of American school children is actually lower than that observed in this study. These data also show that the school lunch program is not effective in preventing malnourishment, for all of the children in this study had been receiving the benefits of a hot school lunch for several years.

The addition of a nutritious soup to the regular school lunch menu for 3 months produced improvements in nutritional status which could be measured by the techniques employed in this study. Significant improvements, in comparison with a control group, were produced in the plasma ascorbic level and the blood hemoglobin content. Definite, but not significant improvements were noted in body weight and with regard to the alleviation of the riboflavin deficiency lesions in the eye. No measurable differences were noted in the height of the subjects nor in the vitamin A deficiency lesions in the eye. However, one would not expect a significant change in the avitaminosis A and ariboflavinosis lesions within the 3-month test period, nor would the height and weight be markedly affected in this time. Even so it is evident that the soup proved to be an effective supplement in the school lunch program. It is unfortunate that the study could not have been continued at least for an additional 3 months. A group of city children of low economic status and not receiving a school lunch would be a much more striking group upon which to demonstrate the efficacy of this type of food.

CONCLUSIONS

1. The nutritional status of a group of 760 children, 9 to 12 years old, was determined in February. On a conservative basis, 50 per cent showed low plasma ascorbic acid, 50 per cent showed avitaminosis A by biomicroscope, 53 per cent showed ariboflavinosis by biomicroscope and 39.7 per cent showed low hemoglobin values.

2. An enriched dehydrated soup containing the full allowances of vitamins, calcium and iron in a one-cup serving has been developed.

3. It was demonstrated that this preparation was acceptable to a test group of 426 children when fed daily for 3 months as part of the regular school lunch.

4. In comparison with the control group, the group fed the soup during 3 months showed a significantly greater improvement in ascorbic acid and iron status and a greater, but not significant, improvement in weight and riboflavin status. No differences were noted between the two groups with respect to vitamin A status and height.

5. The low nutritional status of these children, who for several years were the recipients of a hot school lunch, is evidence that the school lunch in these areas is not properly complementing the home dietary.

6. The low nutritional status of these children of workers in war industries living in farm and rural communities predicts a much lower status for children of low economic levels in congested cities, who are not receiving a school lunch.

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THE FACTOR OF FOOD HABITS

Policies concerning food—rationing procedures, teaching about food, encouraging the use of substitute or alternative foods, alterations in processing, transportation, methods of preparation, and so forth—can be tested against these various deep-seated attitudes toward change and against the residues in current attitudes of experiences during the last twenty-five years. As an illustration, we may test out the various available phrasings as they may affect the impact of Army feeding on the future food habits of the Nation. The diet in the Army may be phrased to the troops and to their relatives as: eating more of what you ought to eat, more of what is good for you; or a step up in the social scale—the Army gets better food than civilians, the men get as good food as the officers; or the results of the most modern scientific knowledge—the Army is scientifically fed to give maximum energy and health. These are all positive phrasings.

But the diet may also be phrased as: the Army has to eat the kind of food which can be most easily dehydrated, transported, and kept, regardless of its palatability; or we have to feed the Army, consequently there is less food for civilians, and civilian standards of living must be reduced; or doctors are looking after the Army, taking care of the boys for their mothers, and good food is part of a medical prescription—all negative phrasings.

If we then ask which of these phrasings will be most conducive to high morale during the war and least likely to leave a residue of negativism and unwillingness to perpetuate after the war food habits learned in the Army, we find that the third positive phrasing, *i.e.* that the diet in the Army is the result of the best available nutritional science, is the phrasing that endows the Army diet with the aura of progress and the possibility of further progress. This does not invoke social distinctions which, though potent, are incompatible with democracy, and does not suggest that the soldiers are being forced to be "good" when they eat Army food—a goodness which, in American thinking, naturally leads to a desire to celebrate by ceasing to be good as soon as possible. It does not invoke ideas of scarcity, ideas of lowered purchasing power, or the fear-inducing ideas connected with doctors, seen as physicians for the already ill rather than as public health officials. The addition of new and strange foods, necessitated by conditions of transportation or geographical location, may be given a positive value and thus perpetuated in postwar habits, provided such an addition is also seen as a positive contribution of science, not as a limitation placed upon the Army by circumstances.

The problem of how the undersupply of meat is to be interpreted to the American people may be analyzed in the same way. People may be told that too much meat is not good for them anyway and they ought to eat less, or that science is providing them with the necessary alternative forms of protein and is enabling them to plan their diet to ensure their being able to deal competently with a lower supply of meat. It is virtually impossible to use the motivation of social status, and it is, perhaps, almost necessary to provide against it articulately, since to most people less meat means lowered social status.—*Margaret Mead. The Annals of The American Academy of Political and Social Science, January, 1943.*

When Women Go to War[1]

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NO MATTER how many women join the Waacs or the Waves, the greatest number of women engaged in the war program in this country will still be found in the factories and plants. And when those who go to work happen to have families, problems spring up like mushrooms. The most urgent of these problems right now is how to care for their children.

War does strange things. A few months ago a certain public school superintendent was wholly convinced that it was not the job of public education to go into the "infant raising" business through introducing nursery schools into his community. Today this superintendent, as a member of his town's Committee for the Day Care of Children, is one of the most vociferous in asking for help from the Federal Government to meet the dramatic problems which the march of women going-to-work has caused.

This superintendent had been hearing of eight and nine-year-olds who brought younger brothers and sisters to school with them; he had seen youngsters, frightened and bewildered, loitering until dark around locked school-house doors; and he probably had heard, because the practice is growing with sinister speed, of eighteen or twenty youngsters "bedded down" in a neighbor's slovenly kitchen until parents returned from their shifts at the war plant. These stories are stark and grim, but they can be told in uncounted towns, which under the impact of feverishly-geared war industries have bulged out of shape and out of control.

And so from his experience this superintendent of schools awoke suddenly to the realization that the immediate and imperative war job for his board of education and for every principal in his school system, was to take care of the children whose parents were keeping the production lines moving in order to arm and implement our fighting men overseas.

Well, that is the story, extremely foreshortened in this telling, of what is happening today in every state of our Union—in communities where the work of war is being pushed to an extent never seen before; where every measure of American industrial ingenuity is being exercised to speed the work "until it hurts." And hurt it does when family life is threatened.

There is no time left for straining at theories or elaborate concepts. In the mind of the superintendent I have just mentioned, as in the minds of all of us here today, there has arisen an almost overwhelming realization of a great responsibility to the children to whom we must pass on such a world as the war leaves. If democratic freedom is to survive, this generation will have to be strong in will, sane, sound, and tight-sinewed in mind and body; indoctrinated, perhaps, with a realistic philosophy of freedom, courage, and security. There will be no place for "softies," but we must see to it that there are none who are weak because we have failed them.

The needs of parents who seek help in caring for their children are met by various means, such as nursery schools, day nurseries, and other child service centers. But for children under two, group care is hardly to be recommended. The patriotic duty of a mother of a child of this age may be to take care of her own child and go to work at a later time. If, however, mothers of young children do work, then placing the child in a carefully selected home in the neighborhood is preferable to group care. This "foster day care," as it is called, must be supervised by a good social agency else the dangers of "kitchen" nurseries for babies will vie with those associated with "latch-key" care for older children.

Another means of caring for these babies may be through a housekeeping aide service. It should be remembered, however, that foster home parents and housekeeping aides must be trained for these jobs. No mother wants to hand her child over to the dubious mercies of an untrained worker.

ORGANIZING CHILDREN'S SERVICE CENTERS

Primarily, however, in this field of service to children, the federal agency which I represent is interested in helping communities obtain group care for the children of mothers working in war industries, and I shall limit my discussion to this type.

It is evident that some children under school age require supervision from early morning until late at

[1] Presented before the American Dietetic Association, Detroit, October 20, 1942.

night; others need care before and after school. Some must be served breakfast and lunch, others, all three meals. Out of these needs has been developed the Children's Service Center which is elastic enough to include all the principles of good nursery school care for young children in addition to meeting individual needs arising from the particular problems caused by the unusual working hours of the mother and father.

Some of the projects for Children's Service Centers which come to my desk, in addition to plans for the care of children from two to five years of age, are concerned with the care of children up to ten and twelve. Thus it appears the centers can be made to give whatever service the community finds is most needed.

In planning for Children's Service Centers, we can't be tied to preconceived notions of the kind of care we think the mothers should have for their children. That is the trouble with some of the existing private child care agencies; they do not give the mothers the kind of service they need at the time they need it. Furthermore, the agencies often are not located in the district in which the mothers live and it is evident that new services must be established.

In many places these facilities should already have been established. Now the mothers are at work and their children are—well, I will make an understatement and say they are neglected. We have no time for a lot of surveys and studies; we have only scant time, indeed, for getting very busy. We can learn as we go what to emphasize and where to ease up in our efforts, but we must get into action.

Practically, there are many women with young children taking jobs in big war plants or the myriad little and big businesses that supply services to the workers in the plants, who are unwilling to divulge their need for help for fear that they, as mothers of young children, will be discriminated against when seeking employment.

You will remember that the Manpower Commission early in August declared the first responsibility of women with young children, in war as in peace, is to give suitable care in their own homes to their children. The Commission further stated that efforts by industry to obtain the employment of women with young children should be deferred until full use has been made of all other sources of labor supply. The Women's Bureau of the Department of Labor emphasizes, however, that there shall be no discrimination against such women.

These statements of policy, with which we can all agree, nevertheless have caused young mothers to be reticent in making public the fact that they need help in caring for their children. Another reason why attempted surveys of the existing need have not given the accurate results desired, is due to the fact that the studies have been based either on reports of employers, or reports of parents of children of school age. It is obvious that neither source will yield the facts—first, because the data are inaccurate, and, second, because mothers who have no children of school age may have children under six and remain uncounted.

Our short experience in this field indicates that when, in general, the need for a Children's Service Program has been established, this program should be set up without unnecessary delay. This is the intention of the Federal Government in making emergency assistance available. The need is critical; the emergency vitally urgent.

Here are some figures that will not bore you, because they reflect a great human picture. As of December 31, 1941, approximately 1,500,000 women were engaged in war industries in this country. As of December 31, 1942, 4,500,000 women will be at work in war industries. By December, 1943, it is anticipated that 6,000,000 women will be engaged in direct and related war effort, and you will then have a pattern of a nation bending all its manpower *and* womanpower energies to win an all-out war.

And these women are going to work because for many of them it affords their first opportunity to buy food, clothing and other necessities which they and their children have been without; and an equally potent motive, perhaps, is that many want to have a real part in the war program. They realize, perhaps, that women must work if the war is to be won.

As I said before, when women go to work, family life may suffer, children of all ages may be neglected. It then becomes the task of the community to step in and offer help to each family that needs it. Communities—and that means people like you and me working on committees for the day care of children or some other group of the local Defense Council—must see to it that we have made the very best possible use of all existing facilities in town, county or state. It may be the school board has funds in its coffers to start the first needed Children's Service Center; some schools have extra funds this year due to decreased enrollment and consequent reductions in teaching staff and maintenance expense.

Perhaps the Y.W.C.A. or the Girl Scouts can provide volunteer help to the private agencies operating a center so that it may remain open twelve or fifteen hours a day rather than the usual eight or nine hours. It is no secret that plans embrace centers with twenty-four-hour, seven-day schedules in towns adjacent to the heaviest war industries.

OBTAINING FEDERAL ASSISTANCE

When, or if, the best of local planning fails to meet the emergent calls for a larger and larger staff to keep pace with the ever-increasing number of women going to work, then the Federal Government is

charged with the responsibility of assisting such communities. Two sources of federal funds are available.

One such was well known to you—the WPA nursery school program in the development of which many of you here have participated. It covered the entire country. I will not discuss this program except to say that I hope you are aware that the last Congress earmarked in the appropriation bill a minimum of $6,000,000 for WPA nursery schools; and that these nursery schools and Children's Service Centers admitted children of working mothers who paid a fee for these services.

The second source of federal funds for services to children comes from the Lanham Act appropriation administered by the Federal Works Agency under General Philip D. Fleming and Mrs. Florence Kerr, whom I represent. The Children's Service Projects are only one kind of war public service administered by this agency which is charged with meeting community needs caused by the war.

We are asking that all projects for which Lanham Act funds are requested, be based on sound community planning. We want to know that people like you are behind these services, and in these particular children's projects, that the educational and nutritional standards which have been approved shall be maintained. And we want to know also that your watchful eyes will give critical supervision in the projects' operation. For the Lanham Act provides that out-and-out grants of money shall be made to the official applicant and this means that the school, the health or the welfare department will hire its own personnel and conduct the program without outside supervision. You will readily understand, therefore, how eager we are to have experts on the local committees.

Finally, then, if you live in a community where women are needed to operate the machines of war, you should inquire as to the plans the community is making to care for these women and their children. They can't carry a full-time job at the factory and the full-time job of housekeeper, too.

There is a long stretch ahead. If women are to work outside the home, ways must be found to take care of the laundering, the cooking, the home nursing, the house cleaning, and the care of the children. It is up to the intelligent leadership in the community to figure how these things can be done.

If these services can be financed and administered through the existing community agencies—fine. If help is needed, the way to get it is to contact the state director of the Service Division of the WPA. This director has been made the state agent of the Federal Works Agency to receive applications for federal allotments and to expedite action on them.[2]

It is up to us on the home front to see that children do not pay a penalty for our thoughtlessness or indifference. When family life suffers, children suffer. And there is one thing of which we must be very sure; that when our fighting men come home, to what we hope will be the smooth paths of peace after the horrors of war, they will recognize that we did our part in taking care of those for whom they fought. They will want to know that no child suffered because his parents were at work in the munition plants; that no child was deprived of his schooling because his family moved into a war industry town; that no ill came to a single member of their families because their community failed to do its part. And none of these things will happen if we pull together with all our strength and in the light of all the wisdom of our minds and the fullness of our hearts.

[2] *Editor's Note:* Under date of December 28, 1942, Dr. Nyswander writes, "With the liquidation of the Work Projects Administration, as recently announced by the President, the methods to be used in filing applications for Lanham Act funds for Child Care Centers may now vary from state to state. The state chairman of the Committee on Child Care of the State Defense Council should be able to inform applicants as to procedures."

THE PSYCHOLOGY OF INFANT FEEDING

The psychologic aspects of infant feeding are fully as important as those more obviously nutritional. One of the commonest complaints relating to children brought to the pediatrician is anorexia, usually dependent on training in feeding habits and usually having its origin in infancy. Often the formula prescription of the physician contributes to the onset of the difficulty. A definite volume of food is prescribed, and the conscientious and solicitous parent endeavors to give this exact quantity of formula at each feeding regardless of possible variations in appetite. In this manner rebellion against food may have its beginning. The desirability of variety in texture and flavor has been mentioned. These variations should be introduced early. The child who has had only liquid and sieved foods throughout the first year frequently refuses coarser foods when they are finally offered. At least some of the fruits and vegetables offered should be chopped or mashed rather than sieved after the sixth or seventh month. The continuance of bottle feeding after 1 year of age is not good feeding practice and is usually evidence that other environmental factors probably are faulty.—*Jeans, P. C.: The Feeding of Healthy Infants and Children, J. A. M. A., 120: 913, 1942.*

Nutrition Services for Crippled Children[1]

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A NATION at war must be a healthy nation if it is to achieve the final victory and to ensure a lasting peace. Results of physical examinations of selectees for our armed forces have caused much concern among health authorities and have led many to consider the need for more adequate health and medical services for all who are in need of care. Many of the defects found among selectees could have been entirely prevented or at least successfully corrected during childhood, had such services been available and fully utilized.

From experience gained in the administration of state services for crippled children much has been learned regarding physical handicaps and related problems among children. Before the enactment of the Social Security Act only about twelve states had state programs for crippled children in operation and in many of these the services were limited to institutional care and treatment. Under the provisions of the Social Security Act, federal funds have been made available for "enabling each state to extend and improve (especially in rural areas and in areas suffering from severe economic distress), as far as practicable under the conditions in such state, services for locating crippled children, and for providing medical, surgical, corrective, and other services and care, and facilities for diagnosis, hospitalization, and after-care, for children who are crippled or are suffering from conditions which lead to crippling." State-wide programs are now in operation in each state and in Alaska, Hawaii, District of Columbia, and Puerto Rico. The federal agency charged with the responsibility for the administration of this section of the Social Security Act is the Children's Bureau, U. S. Department of Labor. The crippled children's program and the maternal and child health program are both administered in the Division of Health Services under the direction of a physician. In addition to a small staff of physicians and other professional personnel, including two nutritionists employed in the Division offices, there is a staff of regional consultants for five separate regions, each having a medical consultant, public health nursing consultant and a medical social consultant. These consultants serve in an advisory and consultative capacity in their respective fields to state agencies administering the maternal and child health program and to state agencies administering services for crippled children. The two nutritionists, who are known to many of you, also function in an advisory and consultative capacity to these same state agencies in the development of the nutrition services under both programs.

In accordance with requirements of the Social Security Act, each state submits annually a state plan that describes in detail the nature of the services which the state agency proposes to carry out during the year for the benefit of crippled children within the state. Among specific provisions that must be included in each state plan are those pertaining to the employment of all personnel under an acceptable merit system and provisions for the efficient administration of the state program. The merit system is being called to your attention, particularly, because it represents an important step forward in employment practices among state agencies and tends to ensure the employment of qualified personnel as well as to offer such personnel security in tenure of office.

State plans must also include methods of locating crippled children, for the use of diagnostic and treatment clinics; acceptable standards for the selection of hospitals, convalescent homes and foster homes used for the care of crippled children; acceptable standards for the selection of orthopedic surgeons, plastic surgeons, pediatricians, and other professional personnel whose services are to be employed in the diagnostic and treatment services; and also satisfactory provisions for after-care services for crippled children by qualified physicians, nurses, physical therapy technicians, social workers and other essential personnel.

In formulating recommended standards to be adopted by state agencies for the selection of professional personnel and for hospitals, clinics, convalescent homes, and so forth, the Children's Bureau has sought the advice of a group of experts who serve the Bureau as its Advisory Committee on Services for Crippled Children. You will be interested to know that on one of the committees, functioning in this advisory capacity to the Children's Bureau, is a

[1] Presented before the American Dietetic Association, Detroit, October 20, 1942.

member of your organization, Miss Marie Hines, of the University Hospitals, Cleveland. In general, it may be said that the state agencies administering services for crippled children have adopted in large measure the recommendations that have been made by the Advisory Committee, although it was recognized that in many instances the recommendations expressed desirable objectives rather then immediate requirements. In this connection it is interesting to note that of the 600 hospitals used for the care of crippled children last year by state agencies, over 90 per cent were approved by the American College of Surgeons.

A frequent question asked of the Children's Bureau is, "How many crippled children are there in the United States?" We do not know the answer, but since the passage of the Social Security Act registers for crippled children have been established by each official state agency administering these services. The most recent information available indicates that these registers in the 48 states and in Alaska, Hawaii, the District of Columbia, and Puerto Rico, contain the names of more than 328,000 crippled children. Those registered are children under 21 years of age residing in the state or territory who are afflicted with a crippling condition as determined by a licensed physician under the definition given in the state laws or regulations.

Fortunately, the Social Security Act leaves the term "crippled child" undefined, which makes it possible for the Children's Bureau to adopt the policy of accepting the definitions in state laws or in state plans submitted by the official agency. Of the 328,000 crippled children listed on state registers, it is known that over 95 per cent are suffering from an orthopedic or plastic condition. During the past two years, 14 state agencies have inaugurated services for children with rheumatic fever and heart disease. There are still other groups for whom little or no provisions have been made for care and treatment.

Unlike the maternal and child health programs which are administered in each instance by the state health department, the crippled children's program is administered in a variety of state agencies. At the present time these services are administered in 29 states by the department of health, in 10 by the department of welfare, in 5 by a crippled children commission, in 5 by the department of education and in 3 by the state university medical school. In many respects the type of state agency administering the program has an important bearing on the availability and the use that is made of various types of professional personnel, including nutritionists.

Although state programs tend to vary in accordance with the resources and needs of each state, all of the services have certain fundamental similarities such as provisions for locating crippled children, the use of diagnostic and treatment clinics both in hospital centers and in outlying rural districts, provisions for hospital care, convalescent or foster home care, furnishing of any necessary appliances, and finally, provisions for follow-up care and supervision. Professional personnel employed in a part-time capacity for rendering treatment services for crippled children and who are not engaged in administrative duties need not be employed under a merit system but the state agency must establish standards that are acceptable to the Children's Bureau for the selection of such personnel. Of the 536 orthopedic surgeons employed by state agencies during the fiscal year 1941, approximately 65 per cent were certified by the American Board of Orthopedic Surgery and the majority of the remainder were eligible for certification.

THE PROBLEM OF NUTRITION

Many of you who are employed in hospitals or in health agencies or other related services are undoubtedly well acquainted with various phases of these state services for crippled children. We hope that you will become even better acquainted with the program because there is ample evidence to indicate that one of the most frequent problems encountered among crippled children admitted to clinics, hospitals, convalescent and foster homes is nutrition. Each year approximately 200,000 visits are made to diagnostic and treatment clinics by crippled children. The children are usually accompanied by at least one parent. The vast majority of these children are from families having inadequate resources not only for procuring the needed medical and surgical care, but also for providing the essential food, shelter, and clothing. Even where the family resources are adequate for meeting these basic needs, evidence is frequently found of lack of knowledge on the part of the parents as to the proper selection of foods for the child and the family. I recall a letter received within the past two weeks from a grateful mother by one of the state agencies in a large southern state, which only recently made provisions for the attendance of a nutritionist at their field clinics. The mother wrote, "After we came home I started Robin Lee on a regular diet and I am so glad to say he is much improved. His ankles aren't swollen and he has gained three pounds since we were at the clinic. I had the doctor check him over and he said he was fine. You can maybe imagine how glad I am." There are thousands of other Robin Lee's who are crippled and of mothers who need counsel and advice regarding diets and food habits.

Clinics for crippled children are frequently apt to be crowded and confused and do not always immediately lend themselves to the development of nutritional services. However, steps are being taken by state agencies to limit the attendance of children at each clinic in order that better service may be provided for the individual child. Heretofore the tendency has been to streamline clinic procedures to the point where children are examined by the

orthopedist almost as if they were on a production line in one of our industrial plants. All too little attention has been given to the child as an individual and to provisions for appraising his general physical status and needs before having a special examination by an orthopedist. An increasing number of state agencies are now developing clinic services on this basis, offering opportunities for utilizing the services of nutrition consultants.

Each year over 40,000 crippled children are admitted to hospitals for operative care and treatment. They may stay from a few days to as long as a year or more although they stay, on an average, about 35 days. During that time, however, they have an opportunity to learn much about foods and eating habits. In many instances the child's observations regarding foods served in the hospital are carried home to the mother and may have a distinct influence, either good or bad, upon the diet of that family. Much depends on whether the hospital dietitian has grasped this opportunity to acquaint the child with the importance of proper foods and good eating habits and whether the nurses who are in attendance have also been instructed in the practical application of the principles of nutrition and dietetics.

Occasionally a public health nurse or social worker is confronted with the problem of attempting to carry out recommendations for a relatively elaborate diet, as outlined by the hospital for a crippled child, in the face of extremely limited family resources. Not infrequently there is no special reason for such elaborate diets and had the individual in the hospital known more regarding the family resources through the medical social worker on the hospital staff, the local public health nurse or the community nutritionists, a more practical diet might have been outlined that would have been equally satisfactory in meeting the needs of that particular child. There is need, therefore, for bridging the gap between the hospital dietitian and the home through the services of the hospital social worker and the community agencies responsible for health and welfare services.

Last spring a series of regional conferences were held with state directors of crippled children services and members of their staffs. At these conferences we discussed among other topics the need for giving special consideration to the nutritional needs of crippled children. Without exception every state director expressed a sincere interest in such a service and sought advice on how it might be used most effectively. It was suggested that in each state the crippled children's agency confer with qualified nutritionists and dietitians in the state for advice and counsel on the development of such services; that where practicable nutritional service be developed as a part of the clinic services; that only those hospitals and convalescent homes be used for the care of crippled children in which trained dietitians are employed (such requirements are made of hospitals approved by the American College of Surgeons); and that the services of a nutritionist be used in outlining and supervising the diets provided for children in foster homes.

There are now 44 state health agencies that are employing qualified nutritionists on their staffs. Many additional nutritionists and dietitians are also employed in the Extension Service of the Department of Agriculture and in state and local welfare agencies and certain other community agencies. It is believed that through the use of these existing services many state crippled children agencies can develop an adequate program for dealing with the nutritional problems of crippled children. According to plans submitted for the current year the majority of state agencies have recognized the need for nutritional services and have made preliminary plans for their inclusion under the state program. These agencies will be looking to you for assistance and guidance in developing these services.

Yes, a nation at war must be a healthy nation. Not only does this importance of health apply to members of our armed forces and to the vast army of industrial workers but also to children who must soon assume important responsibilities in a world torn by the ravages of war. Many crippled youths of employable age will receive vocational training and find ample job opportunities in essential war industries, thus permitting more able-bodied workers to be released for duty in our armed forces. These crippled workers will form the army of the physically handicapped. Today thousands of such persons are being employed in war industries. State registers of crippled children include the names of over 90,000 such youths of employable age. Some have already given their lives in this world struggle for freedom. I recall the story of one boy, a youth of 17 in one of our western states, who was afflicted with osteomyelitis and was treated under the state services for several months with such excellent results that when war came he passed his medical examinations for military service. That boy was killed in action in Libya last spring while on duty with the United States Army.

Not all crippled youths will be able to offer their lives to their country in combatant service but thousands can and will find opportunities for important work in our industrial army. Our job is to see that their physical handicaps are corrected as far as possible, and that they are given opportunities for vocational training and job placement. Included as an integral part of this job is the provision for nutritional services, for no single protective health measure is more important for children than the provision of food that is adequate in quantity and quality and the development of good food habits. Let us realize that we are building today for the leaders of tomorrow.

Editorial

INDUSTRIAL FEEDING

A digest, entitled "Nutritional Programs for Industrial Workers," prepared by the Industrial Relations Section of Princeton University, gives an excellent bird's-eye view of the progress and trend of such programs up to the date of publication (December 1942) based on published works and expressions of opinion on industrial management both here and in England.

The digest presents several interesting points of view regarding various phases of industrial feeding which presumably may be taken as majority opinions from the large number of sources consulted. For example, it is stated that "plant nutritionists and interested government agencies believe that the meal served at the plant should, if possible, be a hot one." The experience of the English in this respect is cited.

In regard to the place of the nutritionist (it appears that the authors of this report misinterpret or confuse the meaning of the term "nutritionist" with that of "dietitian" as defined by the American Dietetic Association[1]) in the industrial plant, significant comment appears in the summary: "Companies employing a well-trained nutritionist to supervise the feeding services have reported the value of this policy in terms of better meals and thriftier marketing. When a nutritionist is employed, the cafeteria and other lunch facilities are usually company-run. The executives of such plants believe that whereas concessionaires must cover costs and make a profit, cafeterias run by plant management can focus upon the primary consideration of improved employee health through good eating habits. Several plants report, in this connection, that they subsidize their lunchrooms to provide the necessary food at reasonable prices." The opinion of Frank M. Gatto on this subject, as it appeared in the October 1942 *Bulletin* of the Philadelphia Dietetic Association, is quoted as follows: "Such [good food] items are to be brought before the worker and offered at such cost as may induce their frequent purchase. This may raise difficult questions in price differentials and in cost accounting. Personally, I am admittedly prejudiced in this matter. I consider the latter problem as secondary in importance to the inculcation of desirable food habits."

In small plants, the report states, where the lunch box is the basis of the factory meal, "Management's primary objectives in relation to the lunch-box meal are (a) education for packing good lunches and (b) the provision of food that can be conveniently distributed at a low cost in the plant to fill in the vitamins and minerals which are deficient in the lunch brought from home." Mention is made of the *Industrial Bulletin*, September 1942, published by the Division of Industrial Hygiene of New York State, which gives suggestions for supplementary foods in a letter to all war plants in the state and estimates that the cost is within the reach of all plants.

As to the time which should be allotted to the lunch hour, "The physicians, executives, and special research bodies are generally of the opinion that a minimum of one-half hour should be allowed for lunch." These groups state that what should be considered a desirable length of time for a meal is contingent upon the nature of the work. Very heavy or very monotonous work requires a longer rest and certain external conditions need to be considered. For example, when poisonous substances are handled, a longer period is necessary to allow the employee to wash up before eating, especially if the washroom and lunchroom are at some distance from the work place.

The problem of between-meal feedings is recognized to be an important one, and the study reached the following interesting conclusion: "English and American studies of workers' habits reveal that when left to themselves most workers take rest pauses at irregular and unsuitable times, and nibble at food surreptitiously. A number of English manufacturers stated, in response to an inquiry into the operation of such pauses, that official pauses were introduced so that management could prescribe the time and distribution that would maintain the best rate

[1] The Executive Board of the American Dietetic Association at the annual meeting of the Association in October 1940 defined the term, dietitian, as "one who has had college training in the science of nutrition and management and is proficient in the art of feeding individuals or groups." The term, nutritionist, was defined as "one who has had college training in the science of nutrition and is engaged in interpreting the principles of nutrition to individuals or groups."

of productivity. Furthermore, the management's interest has had a salutary effect upon morale." The provision of free milk to reduce the health hazards of munitions workers and of malted milk to underweight office and factory employees is cited as an example of the effective use of "snack pauses" in plant-wide health programs.

Evidently a wide variety of opinion was encountered on the subject of providing vitamin concentrates to all employees. It is stated that while some firms are distributing vitamin tablets free of charge or at a low price throughout the plants, most companies using synthetics believe that the best practice is to administer them selectively under the supervision of the company doctor. To the dietitian, the following comment admits hope for future sanity on the subject of vitamins: "Companies adhering to this practice [the use of vitamin concentrates] state that, since it has been found that many essential food factors are unavailable in concentrate form, it is wise to promote nutritious natural meals and to place the determination of the therapeutic contributions of vitamin pills in the realm of the physician."

Attention to the nutrition education of workers was not general, but in those instances in which it was attempted some or all of the following devices were employed, most of which are not new to readers of this JOURNAL: feature articles in company bulletins on proper eating habits, including menus for box lunches; booklets on nutrition and lunch-box menus for workers and their families; cafeteria "Victory" menus to suggest meals that can be prepared at home; serving nutritious foods which appeal to the eye and the taste; pay envelope slips listing items of food of good nutritional value which are on the market at reasonable prices; classes and demonstrations on the selection and preparation of balanced meals, conducted by the plant dietitian or by a representative of the local nutrition group; posters and exhibits emphasizing the importance of good eating habits. Another approach listed as effective in promoting better use of the cafeteria and encouraging more nourishing lunch boxes, is to "make available the advice of a trained dietitian to employees and their families. To encourage the use of the dietitian, one company inserted a coupon in the plant magazine to be checked for nutritional disabilities, such as overweight. This was followed up by correspondence and, where necessary, private consultation."

The brochure concludes with the following: "Considered as a part of a general company health program, the consensus and supporting evidence is that company cafeterias and efforts to improve employee eating habits contribute materially to the fullest use of manpower in the war emergency."

A research project under the Industrial Relations Section at Princeton, by Helen Baker, Assistant Director, made an intensive study of the employment of women in industry in 1941 and again in 1942, the report of which, entitled "Women in War Industries," has been published. While this report is not directly concerned with the nutrition of women war workers, a few special problems are revealed which plants employing women must consider. Lunch periods for women industrial employees vary in length from fifteen minutes to one hour, but of the companies covered in the survey about fifty per cent allowed thirty-minute periods in the belief that this represented the minimum, any shorter period being unsatisfactory. Adequate rest pauses in the middle of the day's work and time to eat a nourishing meal appear to be factors to which too little consideration has been given by many expanding war industries. "Employer opinion as to comparative effects of official and unofficial pauses showed that 91.6 per cent of the companies with official (rota) pauses had experienced good effects as compared to 63.2 per cent reporting good effects from unofficial rests." (Quoted from *Rest Pauses and Refreshments in Industry*, published by National Institute of Industrial Psychology, London).

The report states that American employees, on the whole, seem to agree with British opinion that "rest pauses" and especially "snack pauses" are physiologically desirable and that there is apparent need for a much wider use of official rest pauses and a study of the length of rest periods for women workers under various hours of work and production standards and tempo. There appears to be an acute need for attention to the problem of providing food for workers on all shifts, since lunchroom facilities in most plants are inadequate for present production programs. In many plants no supplementary food is available for those who bring their lunches, except from canteens supplying principally candy and soft drinks. Since women are more affected by their surroundings while working or eating than are men, they are less likely to eat an adequate lunch if they are obliged to eat at their work places. The lunchroom provides a change of scene and a comfortable place to eat. "Many companies recognize the fact that a very light lunch, after the even lighter breakfast that many women have, is not enough to maintain a woman's efficiency throughout the day nor her health over a long period. The firms which have well-equipped lunchrooms, large enough to provide table space for those who bring their own lunches as well as for those who patronize the cafeteria, feel that the investment shows profitable returns in terms of employee morale, health, and efficiency." One company also suggested that, in these days of increasing labor turnover, a good lunchroom may be a factor in attracting and keeping a high type of woman worker. An executive who reported difficulty in getting lunchroom equipment said that, especially since women

were going on the second and third shifts, he felt a lunchroom was so essential to the health, safety, and efficiency of his employees that the equipment should be given the same priority as new production machinery.

A selected, annotated bibliography entitled "The Feeding of War Workers" has been prepared by the Industrial Relations Section.[3] An appendix to the bibliography gives additional sources of information such as the National Research Council Committee on Nutrition and other agencies and a list of commercial organizations. The Industrial Relations Section is also distributing an illustrated booklet, published by the National Association of Manufacturers, called "Food, Work and War" which is addressed to "management" and devoted to problems of "feeding manpower adequately."

EQUIPMENT FOR OVERSEAS DUTY

An article, titled "On Going Into the Army," written by a member of the editorial staff of the *American Journal of Nursing* for the December issue, gives information based on official sources regarding the equipment necessary for foreign service which should be provided by the nurse and that which will be furnished by the Army. Since no doubt much of this information is applicable also to Army dietitians, and in the absence of any similarly detailed information pertaining exclusively to Army dietitians, we are quoting, more or less verbatim, that which seems pertinent.

The potential Army nurse may anticipate foreign service relatively soon after appointment if she has volunteered for it. She should plan and purchase with the fact in mind that luggage will be limited. A foot locker, obtainable from Army and Navy stores and from some department stores, will serve as a small trunk. In addition, a suit-case (with a stout strap) which can be carried without assistance when filled, but no other luggage, is recommended. Luggage from home should be well marked with name, rank, and serial number. Further instructions for marking luggage will follow a definite assignment.

Clothing and personal equipment should include essentials only. "Nice little articles to dress up one's room should be left at home until a permanent location is reached." Civilian clothing brought to the port of embarkation should be kept at a minimum because civilian street outfits will have to be sent home from the port.

Clothing Issued. When a nurse arrives at the port without an issue of clothing, this is supplied at the port. The usual initial allowance of clothing includes such items as cape, caps, coat, gloves, insignia, muffler, overcoat, overshoes, shoes, skirt, sweater, tie, uniforms, and waists. The quartermaster's issue is based on the theater of operations to which the nurse is going. Those assigned to the arctic regions receive such equipment as the following: ski cap, wool toque, mittens, wristlets, knitted shirt, heavy sweater, parka, mountain trousers, wool socks, sleeping bag, ice creepers, and sun goggles. The nurse may feel it wise to supplement these with such items as extra rubber heels and a supply of shoe polish. "As there are many souvenir hunters among the native populations of many countries," her issuance of insignia, bars, and buttons might well be reinforced. Incidentally, the uniform of the Army dietitian, as far as is known at this writing, is as described in the circular from the Office of the Surgeon General mentioned in this JOURNAL, June 1942, and elsewhere in this issue.

Personal Equipment. For the voyage, two pairs of dark blue slacks, one of wool and one of a washable fabric, and two dark blue pullover sweaters will be useful. A large supply of hose of all kinds, silk, cotton, rayon, and nylon, and one pair wool, or silk and wool, will be useful. As one does not know which country is designated in the sealed orders under which members of the Corps sail, an all-round supply is best. This also applies to underwear; if new is needed, cotton is the safest purchase. Some warm underclothing is essential for comfort on shipboard. Several girdles will come in handy; pajamas are advised rather than nightgowns; and "shorts are not worn at any time." One flannel robe and a cotton housecoat are useful. Quilted robes should be avoided as they require considerable packing space.

Personal articles suggested include a waterproof money belt; wash cloths; a few bath towels; a small clothesline and pins; soap for bath and laundry (hard to get in many countries); a supply of creams for at least sixty days; several tooth brushes, not all of which are nylon (it seems certain crickets and ants relish nylon). A good sewing kit with darning cotton and thread to match stockings and uniforms is essential. Needles and pins should be rustproof, likewise combs, brushes, and hairpins. A clothes brush and dry-cleaning fluid are useful in the care of the street uniform. The extra, personal things which are useful include bandage scissors; wrist watch; stationery; two fountain pens; ink in a rubber container; pencils; one or two flashlights of Army regulation size with extra batteries; a good jack-knife; a small hammer; a can opener; a cigarette lighter with plenty of fluid and a supply of flints whether you smoke or not. Army mail is sent free, but a supply of air mail stamps will expedite service.

Processing. "Processing" is the Army's term for the complete routine and detail at the port of embarkation which ensures a final check-up on physical condition and equipment, and records facts essential to the nurse's future. If she comes from an Army

[3] Department of Economics and Social Institutions, Princeton University, 25 cents.

camp, transportation will have been arranged; if from her home, she is reimbursed at the port. She should carry sufficient money to cover expenses for the time involved in travel and for incidental expenses for at least fifteen days following arrival at the post of duty. It is imperative that she take the oath of office before leaving for the port of embarkation.

All are warned to guard their conversation while in transit, and to give out no information regarding foreign service, or the naming or location of post, ports, and camps. All orders and other official papers should be readily accessible and well guarded, when traveling alone.

If in a group, the chief nurse will have all papers for the group in her possession. It is not advisable to draw full pay abroad as this usually is not needed and it is unwise to accumulate funds in another country because there may be loss on exchange or through theft.

Immunizations are renewed at the port of embarkation. Typhoid and smallpox vaccine, yellow fever serum, antitetanus and typhus and occasionally cholera vaccine are administered, depending on the destination. Following the blood typing, the metal identification tags (two) are issued on which appear the name, rank, serial number, blood group, religion (Catholic, Hebrew, or Protestant), year of tetanus toxoid series and year of stimulating dose, and the name and address of nearest relative. The tags should be worn on a metal chain.

Field equipment issued for foreign service includes a bedding roll, two mattress covers, four blankets, one tent (two shelter halves), two poles, and ten tent pins. The mattress covers can be filled with spruce or other suitable material to serve as mattresses. Although nurses usually do not erect their own tents, "they learn how to do it." This equipment is packed and not carried.

Additional field equipment, either worn or carried, includes a helmet with removable stiff fiber inner helmet for tropical wear, gas mask, canvas field bag containing mess gear and with room for a few personal articles such as purse and toiletries, and a pistol belt to which a first-aid kit and canteen with canvas cover may be hooked.

Packing and Embarking. In packing, everything except what may be needed on the journey is placed in the foot locker. In the absence of existing prohibitive orders, a portable radio and a camera, small enough to be packed with personal effects, may be carried. Valuable jewelry and keepsakes should not be taken. Into the bedding roll may be packed most of the white and occasionally other uniforms, extra shoes, cape, and personal articles for which there is no space in the foot locker.

Definite instructions are given regarding formation for boarding ship. When embarking, the Army nurse wears full outdoor uniform, with the field bag hung from a strap over the left shoulder and carried on the right side, the helmet behind and above it, the gas mask hung from a strap over the right shoulder and carried on the left side, the pistol belt about the waist, and the overcoat over the arm. Attached to the pistol belt are the first-aid kit and canteen. During "processing" the nurse will have addressed a "safe arrival card" to her nearest relative. To this is added the A.P.O. (Army Post Office) number. When the port is notified of a safe arrival, these cards are promptly released in the mails.

EXPLAINING RATIONING TO PATRONS

With the extensive publicity which is now being given to the subject of rationing, in the press and on the radio, one might assume that every intelligent and patriotic-minded citizen would understand, when dining in a restaurant or elsewhere, why coffee, tea, butter, beef, etc. cannot be served in the usual quantities. Unfortunately it appears that not all patrons are sufficiently intelligent or patriotic to understand this, and an easy method of avoiding needless grumbling and unpleasantness is to explain, in words of one syllable, if necessary, the reasons behind the meager servings. A few devices for this purpose, in the form of table cards and posters, prepared by commercial food concerns and others, have been reported in previous issues of this JOURNAL. These are attractive and usually are pleasingly effective and in some instances are furnished free to food service operators.

Another method, equally effective, is the use of printed wall placards which can be placed conspicuously in the dining room. One such, prepared by Elisa Andersen, dining room manager of the New York Telephone Company cafeteria at 101 Willoughby Street, Brooklyn, New York, has come to our attention, the text of which follows:

> Old Mother Hubbard, who, if we recall our nursery rhymes correctly, gazed upon a cupboard that wasn't too well provisioned, might feel quite at home if she strolled into any of our storerooms one of these December days. Our supplies of staple foods have fallen off almost to the vanishing point in a number of cases and current information makes it appear that the situation will, as time goes on, become progressively more difficult and complex. Consequently we have found it necessary to adopt additional precautions for meeting the rationing objectives set up by Uncle Sam.
>
> We've already told you about the difficulty in obtaining sugar, tea and coffee. Added to the list of restricted commodities which our suppliers have informed us within the last week or two can no longer be furnished in the quantities to which we have been accustomed, are butter, cream, cheese, meat (especially beef and pork), canned goods and shortening. In the practically-impossible-to-purchase class are ice cream in most locations, dried fruits like prunes, raisins and apricots, cocoa and chocolate. The list is expanding rapidly and much of the time it is a case

of buying what we can obtain rather than ordering what we would like to have.

The rationing of sugar on a "spooned out" basis, the "tea-less" days, the serving of coffee only through the lunch hour, and the half squares of butter are all measures which have been taken only in the interest of accommodating the greatest number of employees possible. That the need for introducing these restrictions is well understood is indicated by the wholehearted cooperation with which they have been received by dining room patrons throughout the area.

We will continue to take sensible precautions in your behalf in the days to come even though the need for them—as is sometimes the case—develops on an overnight basis. With your cooperation and understanding, we will do the best we can under the difficult conditions which we think will prevail during 1943.

Dining Service Department

Current Comment

FOOD PLANNING IN A WARTIME ECONOMY

T. SWANN HARDING[1]

The basic economic essentials of total war are: first, government control of production to the end that all such expendable goods as the armed forces require to win are surely turned out; second, government control of consumption to the end that civilians will receive only that bare minimum of goods which will enable them to subsist in good health at generally lowered standards while properly performing the tasks assigned them; third, the confiscation by taxation and other compulsory means involving bond-buying, savings, and charities, of enough civilian earnings to prevent an inflationary crisis in the field of consumer goods, and to enable us largely to pay for the war as we go along.

The second item involves rationing of commodities. We must share scarcity as we never learned to share abundance. Unless we can do so, those with the most purchasing power and the most leisure will get the most goods regardless of their needs. Total war, however, places needs first. The needs of those who serve most must be filled in the most efficient way possible.

The Department of Agriculture is well equipped to handle problems concerned with the scientific production and distribution of food. Pursuant to an Executive Order dated December 5, 1942, which delegated authority to the Secretary of Agriculture to assume charge of our national wartime food program, a Food Production and a Food Distribution Administration were set up in the Department. The Secretary now has authority to determine the need and amount of food available for civilian rationing, exercising his priority and allocation powers through the OPA. He is also empowered to implement a program that will supply food adequate to meet all military, governmental, civilian, industrial, and foreign requirements.

The Food Production Administration will carry out provisions of the farm-production programs, provide such loans and grants as farmers need, develop and apply soil-conservation measures, administer the crop-insurance on wheat and cotton, and in every other way facilitate such production of food and fiber as will enable farmers to achieve their production goals. The Food Distribution Administration is organized into nine commodity branches, as well as a Civilian Requirements Branch, a Civilian Programs Branch, a Food Conservation Branch, a Transportation and Warehousing Branch, a Compliance Branch, a Program Analysis and Appraisal Branch, and a Program Liaison Division.

The Forest Service, Rural Electrification Administration, the Commodity Credit Corporation, and the Agricultural Research Administration retain their functions essentially unaltered. The new organization is admirably devised to carry out the planning and action functions of the Department on the food front with a staff of specialized personnel long trained in such work.

Experts tell us that from 10 to 15 per cent, and sometimes more, of all food grown has usually been left to rot in the fields, generally because adverse market conditions made it unprofitable to harvest it. There is waste as great or greater than that in the normal processing and marketing of food. Finally, consumers themselves in the past have wasted from a third to a half of the food they procured. We cannot afford such waste in total war.

The production of food will become increasingly difficult each year of warfare. While our farmers went over the top in 1942 and produced even more than was asked of them, they cannot be expected to do this in 1943, much less in 1947 or 1950. Even next year scarcities of labor, equipment, and materials may force American farmers to produce less than they did this year. Farm production must be planned and carried out within a total war frame of reference wherein many equally important activities draw upon essentially the same pool of labor and critical materials.

In 1942 farm production was carefully planned in advance by specialists. It was so planned as to give our armed forces all their requirements while providing rather too bountifully for civilians. Furthermore we are under increasing obligation to others of the United Nations with whom we have pooled our resources, including food. But despite careful plan-

[1] *Editor's Note:* Mr. Harding, who has been on the Washington scene for many years, is now attached to the Office of Information, U. S. Department of Agriculture, according to the *Magazine War Guide* for February-March, 1943. He is in a position, therefore, to be well informed on the subject he discusses in this issue, but the statements here presented represent his personal opinion and in no sense should be considered as an official announcement.

ning, our commitments to the armed forces and the United Nations increased more rapidly than we had anticipated. This year they will take at least one-fourth of our farm production.

At the same time increased incomes would permit civilians to buy much more food than we can allow them to buy. We cannot afford to coddle civilians during total war. We must honor our full obligations to members of our armed forces, to our war workers, and to the peoples of the United Nations. But the ordinary run of civilians must get along with as little as they possibly can.

We are engaged again, as in 1917–18, in a global war which began with the turn of the century and which is probably destined, as Milo Perkins has said, to continue in one form or another for at least a generation. To prosecute that war we must plan upon expending three-quarters of our annual income upon it for an indefinite period to come, probably ten or fifteen years. That means cutting civilians to bare essentials.

We have data on population and on nutrition standards. We know our population age classes and the relative numbers of heavy and light workers. From this information we can calculate the quantity of food necessary to keep all citizens in good health and to enable those who work hard to have the energy they require.

We likewise have information on the composition of the diets that will most economically serve our purposes. We can turn this into estimates of crops and animals required, making due provision for processing, packaging, and transporting the food. We can make such allocations of labor, materials, and equipment as will enable us to produce the finished food needed. This is a purely functional problem that must be solved on scientific principles. Profit is out for the duration, maybe even afterward insofar as a basic ration of nonluxury foods is concerned.

Rationing is fundamental. The idea of food rationing is not to pool commodities and gradually enrich the diet. It is to see that each individual gets the food he or she requires and not a bit more. Certain classes, like those in the armed forces and at heavy war work, may even get palatable food, but as for the rest of us it is a question of the most economical health maintenance possible. The main consideration is to prevent the malnutrition which leads to illness; it is not to provide merely palatable and desirable foods. A ration that is scientifically adequate may be dull and monotonous. We must get used to that.

We really have a problem before us here. For one thing we must not waste effort or materials in the production of any food we do not absolutely need. We must be prepared ahead for scarcities. A short meat supply means increased dependence on milk, cheese, and eggs, but we must provide cheese and eggs for our allies too. Cheese and egg dishes also require more milk than meat dishes. Furthermore our cheese supply tightens and rationing is not far off. The situation with regard to fats and oils, too, becomes tighter daily, but we cannot use too much milk for butter. At the moment we actually have too little butter to justify rationing. Each shortage has repercussions throughout food supplies as a whole.

We must meet the requirements of our armed forces, of our industrial workers, and of those in the United Nations who are dependent on us for food. Thereafter minimum safe provision must be made for rationing food to the remainder of the population, assuring them only a dietary which will maintain them in health and enable them to perform the activities assigned them in an economic order that will become increasingly government-directed as the war goes on. Total war demands that. Our food industry must become frugal and efficient. It must provide maximum service.

In his annual report for 1942, Secretary of Agriculture Wickard has stressed the fact not only that "the people of the war-torn nations must be fed" but that our own dependent people also must have proper food. For "proper feeding of these people is not a liability but an asset to the Nation." After the war a health-giving basal diet should be provided for all citizens just as we provide free education and free libraries, for food is even more fundamental than books and book learning.

FOOD THERAPY AND WARTIME FOOD PROBLEMS

MARGARET MEAD[1]

The study of the pathological in order to increase our understanding of the nonpathological or "normal" is an old and accepted method in psychology. The exaggerations, deviations and conspicuous distortions of abnormality throw into relief problems which are barely discernible in the behavior of undisturbed human beings. A similar use may be made of the experience of the food clinic, of the counseling practices and successes of the food clinician who works with the patient who can think of nothing but food, with the patient who refuses to eat, the patient who cannot keep on his diet and the patient whose food choices are systematically and grotesquely distorted.

[1] Dr. Mead is Executive Secretary of the Committee on Food Habits, National Research Council, and is acting as a consultant to the Committee on Emotions and Food Therapy, Diet Therapy Section, American Dietetic Association. This paper was prepared in response to a request from Elmira Blecha, chairman of the latter committee, who asked Dr. Mead to formulate some of the relevant research problems. The Committee on Food Habits is collaborating with the Diet Therapy Section in this exploratory study.

The food clinician works with nutritional standards on the one hand and highly varied human nature on the other. She learns that the same diet can be presented to a patient, as an indulgent and full diet, or as a restrictive and punishing diet, merely by the elaboration or scanting of the number of nutrients in each article of food. She learns how to present a diet so that it will seem like the straight-jacket for which a compulsive personality craves—sackcloth and ashes, a hair-shirt of bitter penitential routine—or on the other hand as something so easy, so unexacting, that a child, a lighthearted child, would be able to follow it. The same diet may be phrased as one in which the patient squeezes the last cent out of every dollar or in which money is spent lavishly to buy good food. Such adjustments as these the skilful food clinician makes every day, after she has taken a good food history and judged the patient who sits before her. In her hands a diet is no Procrustean bed but a flexible instrument which can be adjusted to a variety of human needs.

But this skill is a clinical skill; it has neither been systematized so that it can be taught other than through direct apprenticeship, nor has it been recorded and analyzed so that the principles which it embodies will become available as a background for the changing of food habits in the wider cultural scene. Below I wish to suggest a series of steps which food clinicians might take to make their experience available both for teaching and for social planning.

(1) Select a number of extreme cases, if possible representing reciprocal attitudes toward diet, *e.g.* a case with maximum food rejection and a case of extreme obesity based on uncontrollable eating, or a case of rash disregard of diet, even to the risk of death, and a case of compulsive overanxiety about dietary detail. Record the treatment, the terms in which the diet is prescribed and the patient persuaded to follow it so as to show in detail the way in which the essentials of nutrition were presented in a manner understandable and acceptable to the patient. A few cases presented in great detail will be more valuable than a large number more cursorily treated.

(2) Select a series of cases in which the diet to be prescribed is much the same, as in a diabetic diet, but in which the personalities of the patients differ as much as possible and in which extremes are represented. Record the alterations which have to be made in the treatment to obtain acceptance.

These two suggestions cover cases in which the food clinician accepts the vagaries of the patient's personality as given and in which her skill lies in the way in which the diet is presented to the patient. Understanding of the principles which underlie this skill should provide valuable clues for programs in which new dietary practices are to be presented to people whose culturally standardized character is known, or whose situation—as of recent starvation—has stereotyped their behavior so that they may be expected to respond in a similar way to a similar phrasing of dietary suggestions.

(3) Select cases in which the giving of a diet is actually part of a therapeutic process, not only in terms of nutrition, but also in terms of the psychiatric treatment. For example, where an overprotected child is helped to assert himself by learning to handle his own diet and ignore his mother, or where a shift in the responsibility for administering a diet also alters a progressive disequilibrium between husband and wife.

Cases of this sort should illuminate the way in which changes in food habits may be expected to interlock with other aspects of culture, and highlight the interdependence of food habits and other aspects of human behavior.

(4) Select cases in which the patient is reacting with particular intensity to some facet of the wartime situation, by hoarding, by fear of rationing, by extreme hostility to our allies or the people of occupied countries with whom food must be shared, etc. Detailed analyses of such cases, verbatim reports of the words which they use, records of their fluctuations in keeping their diets and the rationalizations which they present should all provide valuable clues to possible American attitudes which fail to appear in "normal" people now, but which may appear when conditions become more acute. Clinic patients may be used here as barometers of future social problems as the food situation becomes more acute.

(5) Analyze clinic records, comparing the last three years to see if significant alterations in the type of presentation problem are found with the course of the war. Statistics of clinic cases in other fields, *e.g.* Graves' disease, have shown interesting correlations with the war, and it is quite possible that comparable systematic relationships may be found between the problems presented in food clinics and the developments of food shortages and food restrictions.

For an understanding of the relationships discussed above, I am particularly indebted to Frances Stern of the Boston Dispensary, Dr. Hilda Bruch of Johns Hopkins Hospital and Caroline Falls of the Community Service Society, New York City.

THE NUTRITION PROGRAM IN ARGENTINA

MARGARET SHATSWELL PRICE[1]

In a little book called *The National Nutrition Policy in Argentina*[2], Dr. Pedro Escudero gives the

[1] Mrs. Price, a member of the American Dietetic Association, received her Bachelor of Arts degree in romance languages from Radcliffe College in 1930 and completed her home economics work, including the training course for dietitians, under Anna M. Tracy at Florida State College for Women in 1940. She has traveled in Spain, Mexico, and Cuba. The above article is based on Mrs. Price's

history of the Argentine National Nutrition Institute.

The story begins in 1921 when Dr. Escudero, as professor of clinical medicine at Buenos Aires, astonished his countrymen by turning his professional attention to food and the mechanics of the kitchen. The medical schools, according to him, were "blind and deaf to the gravest human problem, nutrition." Yet thirty-three per cent of the men examined for military training were declared unfit because of malnutrition, and further, in the opinion of Dr. Escudero, malnutrition was to blame for many deaths reported as resulting from "not specific" causes. And so, in spite of a complete lack of sympathy on the part of most of his colleagues as well as the public, he set out to create an appreciation of the importance of good nutrition.

His first act was to establish a "Refectory" where patients suffering from diseases known to be directly influenced by diet could be held to a feeding régime while they continued their regular occupations. To reach a wider public he conducted for a year and a half in *The Press* a weekly column exposing the shocking conditions resulting from malnutrition among the Argentine people. His efforts eventually succeeded in arousing several influential groups, and resulted in the foundation of the Municipal Nutrition Institute in Rawson Hospital in 1928. By 1935 the Institute had expanded to the point of becoming independent, and occupied a building of its own.

Three years later, Roberto Ortiz, President of the Republic, said, "No nation possesses any wealth superior or comparable to the people themselves. . . . We must approach the problems of nutrition with a definite plan for improving the condition of those people in the interior who show a decline in human efficiency." And in that same year an executive order created the National Nutrition Institute under government control.

The task of improving the state of nutrition throughout the Republic was approached on three fronts, technical, economic and social, since it was believed that these were the essential factors in the feeding problem. Plans were made for extended research in experimental cookery, soil composition, regional production of food, chemical composition of foodstuffs and their function in the body, and in the environment, habits, and social conditions of the people. From time to time pamphlets on the results of these studies were to be published and distributed free of charge upon request.

The Institute is composed of five divisions: Education, Social Action, Feeding, Research, and Hospital. Each is concerned with definitely related subjects, and is headed by a Division Chief. Coordinating the whole is the Office of General Administration or Direction, which in turn is divided into sections as follows: Office of the General Secretary; Office of the Technical Secretary; Office of the Executive Secretary; Office of the Accountant; Technical Library; Publicity; Board of Admissions, and the Technical Council, composed of the Director General, the Technical Secretary, and all the Division and Section Chiefs.

Of the five main divisions of the Institute, the first, the Education Division, is most interesting to North Americans because, while it is related to our system of home economics education, it differs in some points. In this review, Dr. Escudero gives a sketch of the status of training in dietetics in Europe and America as of 1939. Of the European methods, the German most closely resembled our own, but the academic requirements were not so high. A "Dietetic Assistant" in Germany must be a graduate nurse or have a "diploma in cooking" in order to enter a school of dietetics. The training is essentially practical and lasts a year. To qualify as the director of a diet kitchen the candidate must have an additional year of training. The Austrian and Swiss systems are similar to the German, while in England at the time of writing there was but one school of dietetics, a private institution in London. Entrance requirements were a minimum age of seventeen and the completion of elementary school work. As to France, Italy, and Spain, Dr. Escudero states that he has no knowledge of any schools of dietetics in these countries. He has great respect, however, for the American idea of nutrition training. It is broader, he thinks, than the European, and differs also in that it assumes a social responsibility. The European trainee emerges merely as an assistant; the North American dietitian is a technician, a practitioner in her own right.

For the Argentines, however, even the North American system is not considered sufficient. The United States is blessed with doctors well versed in the newer knowledge of nutrition, while in Argentina nutrition has had very little attention from medical men. Therefore the Argentine dietition needs more specialized training. She cannot lean so heavily upon the professional knowledge of the physician.

The first courses in Clinical Nutrition were opened in 1937 by the Buenos Aires Faculty of Medicine, with Dr. Escudero in charge. In 1938 the same body approved the title *Medico Dietologo* to be granted to specialists in nutrition.

The *Dietistas* (dietitians) are trained in the National School for Dietitians, opened in 1938, an outgrowth of the Municipal School for Dietitians foun-

translation from the original Spanish and it is hoped will be followed by others covering similar South American and other Spanish publications.

[2] *La Politica Nacional de la Alimentación en la Republica Argentina* by Dr. Pedro Escudero. Editor: Instituto Nacional de la Nutrición, Buenos Aires, 1939.

ded in 1935. The entrance requirements are the same as those of the medical schools, and the course lasts three years, the studies resembling those offered for North American nutrition students. At the end of two years, the student receives the diploma of *Auxiliar en Alimentación* (nutrition aide). When she has completed her course she is a full-fledged *Dietista*. A one-semester course for nurses entitles the student to a diploma as *Enfermera idonea en Alimentación* (competent in nutrition). The government offers several full scholarships for the National School for Dietitians and fellowships with additional subsidy for physicians in the interior who wish to take special courses in nutrition at the Medical School.

The second division of the Institute, Social Action, is concerned with studying the condition of the Argentine family, and with developing general prophylactic measures. It offers nutrition aid through "Public Refectories" for those who need special diets. It operates mothers' milk stations, gives nutrition counsel to pregnant women and to mothers and children, meanwhile carrying on educational propaganda.

The third division of the Institute, devoted to feeding, takes over the practical training of the nutrition students, primarily through its large kindergarten. Free or low-cost feeding centers and a free consultation service are maintained. One of its most important functions is the direction of a free station for mothers' milk.

The fourth division, Research, controls laboratories of chemistry, bacteriology, microscopy, biology, and anaphylaxis. An experimental farm, part of the original plan, was to have materialized in 1941.

The Hospital Division is self-explanatory. Outpatient clinics and the direction of hospital dietetics are under its supervision.

Dr. Escudero says that this crusade in the name of better nutrition has entailed much time and effort. As leader of the movement he has used the press and the radio and has enlisted the help of the university extension schools and other educational institutions and societies. Demonstrations have been conducted in factories employing women. Arrangements have been made for teachers from the hinterland to attend lectures at Buenos Aires, and for courses to be given in the rural districts. Meanwhile, many publications have been issued, most of them from the pen of Dr. Escudero or written under his supervision.

Much has been accomplished, but Dr. Escudero has manifold plans and high hopes for putting Argentina in the vanguard of the nations who look upon nutrition education as a means of raising the level of national health and well-being.

Nutrition and the War

VOLUNTEER WORKERS AND THE NUTRITION PROGRAM[1]

LUCY SIMPSON MULQUEEN[2]

Each day the nutritionist engaged in community work realizes the handicap under which she is working because of lack of time and contacts to reach every corner of her city. She needs assistance if she is to succeed in her aim of changing the eating habits of a sometimes reluctant population. A number of us have found that, lacking a sufficient number of trained persons, the socially-minded volunteer who is eager and anxious to help can be utilized successfully. She can fulfil a variety of necessary functions even though she has no formal training in home economics or nutrition. Nutritionists in the state health departments of Georgia, Kansas, Kentucky, Oklahoma, Louisiana, New Mexico, Virginia and Wisconsin have found this to be true. In addition, volunteers have been of considerable assistance in hospital work.

In particular, all nutritionists seem to agree that lay persons can be especially useful in the organization of community programs. They have the necessary requisites of time, acquaintances, and understanding of local situations. Since she is a newcomer to the locality, the nutritionist cannot hope to have as comprehensive a picture of community problems, personalities, and customs, as an established resident of that community.

One activity that may be handled successfully by the nonprofessionally trained volunteer is publicity. There is an urgent need for considerable "advertising" in most communities if public interest and cooperation in local nutrition programs are to be promoted. The volunteer with an aptitude for writing in either the newspaper or radio field, can be of inestimable service. The nutritionist, as a matter of course, should carefully edit all material in the interest of adequate and reliable information, but the volunteer can do the actual writing, arrange for its publication or broadcast, and take care of other necessary details.

The nutrition consultant of the State Health Department of Georgia reports that volunteer workers who have completed the standard nutrition course of the American Red Cross are giving food demonstrations in maternal and infant centers, sponsored by the department. Not only is the volunteer contribut-

[1] Report of a subcommittee of the Community Education Section, American Dietetic Association, presented at Detroit, October 21, 1942.

[2] Director, Community Nutrition Service, Cedar Rapids, Iowa.

ing to the education of the parents attending such centers, but she is also acquiring an appreciation of the problems which exist within her locality. To ensure that a demonstration meets the needs of the cooperating agency and fits into its schedule, the nutritionist should prepare outlines and suggestions for the volunteer to follow, and rehearse the demonstration carefully in order to be sure that the proper technique is employed.

The Community Nutrition Service of Cedar Rapids, Iowa, which has employed untrained volunteers in a variety of ways for a number of years, recently assisted in a research project undertaken by the Psychology Department of the University of Iowa in collaboration with the National Research Council, for the purpose of determining the reasons for certain attitudes toward food and to discover the most effective ways of bringing about changes in individual food habits. The nutritionist gave lectures to some groups and served as the "expert" in the discussion method used by the groups. Carefully selected lay workers then did the necessary home visiting and interviewing prescribed by the study.

All of us are aware of the effectiveness of surveys in arousing groups and communities to their needs, but we often find the details so time-consuming that we hesitate to undertake such projects. However, we have found that the lay volunteer can not only tabulate the findings of surveys, but if she has a knack for meeting people and winning their confidence, she can also conduct the necessary interviews.

The nutritionist of the Tuberculosis Association in Greenwich, Connecticut, has contributed many interesting ideas for utilizing volunteers. Many of the nutrition aides wish to do something besides canteen work and applying in their own homes what they have learned. To solve this problem and at the same time further the nutrition program in Greenwich, an attempt is being made to organize the aides for broader service. One volunteer sent out questionnaires to all prospective nutrition aides, giving them an opportunity to sign up for one of the following services: (1) Assisting at nutrition classes such as: roll call, distributing material, arranging for and taking care of films, and setting up exhibits as required, etc. (2) Serving lunch in a school where a new project is being started. (3) Helping nutritionist complete office work, *i.e.* collecting, arranging and preparing illustrative material and working out menus and market orders, etc. (4) Work at hospital checking menus in private wing and assisting in kitchen preparing custards and other simple foods.

One unusually interested and capable volunteer in Greenwich, for example, took the Red Cross Nutrition Course and later attended a short special nutrition course at summer school. She has since developed several interesting projects. For instance, she organized a young married women's study group which met informally over the tea cups, women who could be reached more successfully by such means than would have been possible had the study been suggested by a stranger and a professional worker. But the most interesting work of this volunteer was the organization of a Negro group in a small community of 300 persons near Habe Sound, Florida, where no nutrition work had ever been done. She taught simple nutritional facts to a group of thirty or forty women who met several times. Exhibits were presented and the meetings enlivened by refreshments such as whole wheat bread and peanut butter sandwiches, raw carrots and milk. At the end of the study, the women competed in a poster contest.

The same volunteer also organized a committee of white and Negro women to handle the Habe Sound Nutrition Fund which she established. Milk was scarce and expensive, therefore a milk fund was set up and milk supplied at a nominal cost. As a result, during the first three weeks in February, 1352 quarts were sold. Children who never had milk before now have it, and one baby of thirteen months was "weaned" from coffee. All of these projects have been carried out with the advice and approval of a professional nutritionist.

The nutritionist with the State Board of Health in Oklahoma reports that in Tulsa County a consultant service in grocery stores was established during Nutrition Week. Fifty information centers were set up in these stores throughout the county and a regular work schedule was made out for the volunteers for each center. The information centers were open between the hours of 10 and 11:30 a.m. and 3 and 5 p.m., when it was believed food shoppers would have more time to stop and ask questions. More than 200 women served in these centers during the week, and educational pamphlets and leaflets were distributed in large quantities.

Another volunteer program of interest in Oklahoma has been the Junior Volunteer Project carried on in Oklahoma County. The Camp Fire Girls, Girl Scouts, and Girl Reserves prepared nutrition scrapbooks to be placed in waiting-rooms of doctors' offices, hospitals, and health clinics. An outline of what the scrapbook should contain and some mimeographed material to include in the book were given to those who participated. The girls received credit in their club work for the preparation of the books, which at the same time gave them an opportunity to learn something about nutrition.

No report on the work of the volunteers would be complete without mention of some of the problems involved. The professional worker is apt to forget that most volunteers are homemakers and as such their first interest and responsibility is the home. The organization of any volunteer program should take this into consideration and allow for emergen-

cies. There will always be occasions when the volunteer is unable to accomplish at a given time the task assigned to her.

The untrained volunteer should not be allowed to teach nutrition, for her limited background may lead her unwittingly to make statements and create impressions that are difficult to correct. The assets of the volunteer worker, nevertheless, far outweigh her liabilities and if the professional worker will direct her in work that is interesting she will be able to make a real contribution to the Nutrition Program.

FOOD AS A WEAPON OF WAR IN EUROPE TODAY

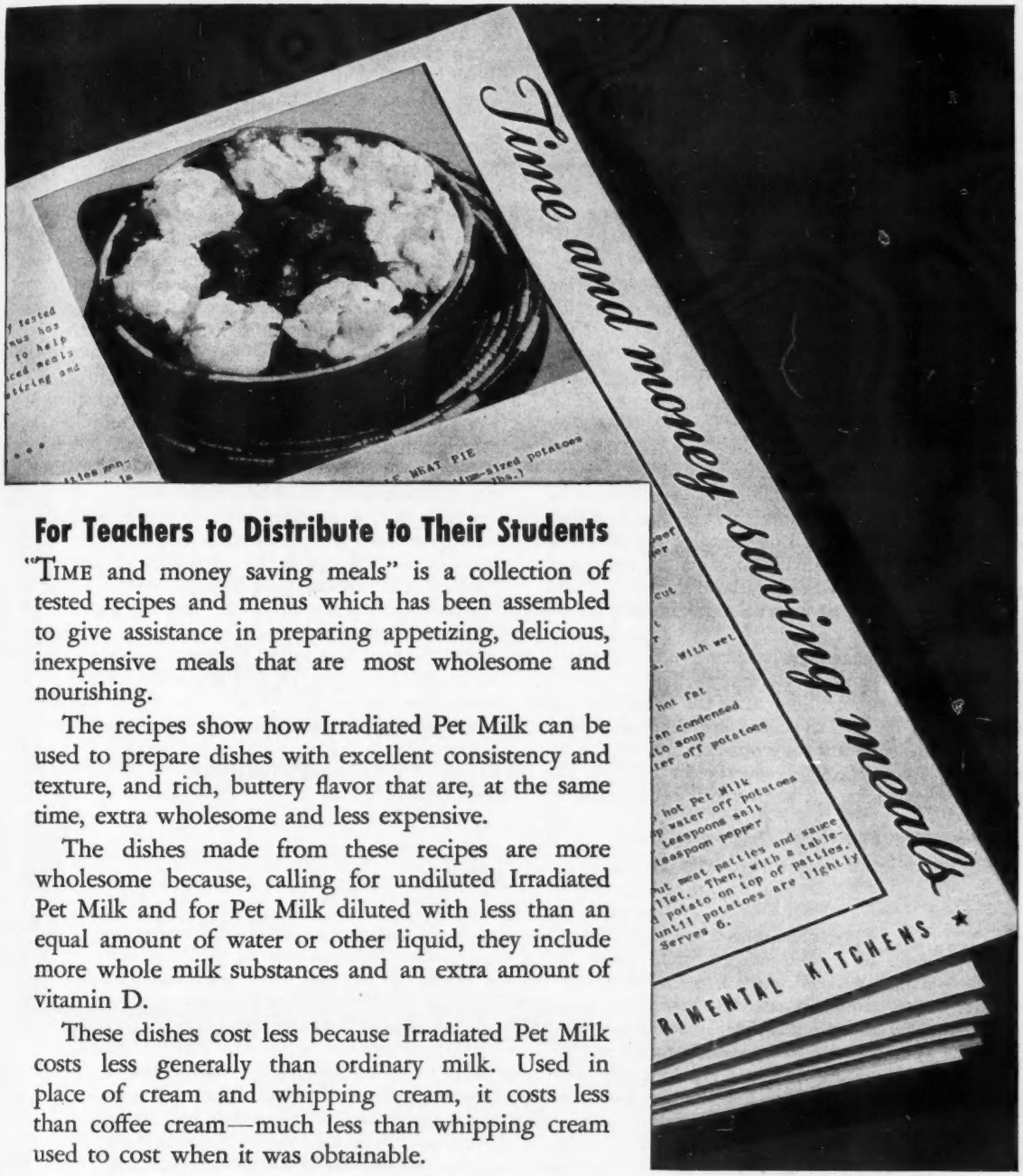
In contrast to the present German rations which average 2960 calories a day for workers, and Britain's allowance of about 3300 for the same group, official ration figures in Russia range from 3500 daily for ordinary civilians to over 5000 for workers in heavy industry. But these figures and the generous monthly rations for workers of 5 lb. meat, 2 lb. butter, and 1 lb. sugar are "purely nominal" according to the report of a correspondent for *Fortune*, quoted in an article entitled "Hunger Spreads Over Europe" in the January issue of that magazine. This correspondent reports that in August and September, "Muscovites got no meat or butter and it is doubtful that they will get much of either throughout the winter. The army is well fed, but city dwellers not working in heavy industries go hungry. Doctors have found that the average adult has lost 15 pounds in the past year. Long queues of 200 and 300 people form outside the stores in the small hours of the morning; many are sent home with empty shopping bags after waiting for 10 hours and longer. When ordinary people manage to get hold of a piece of bread, they often wolf it at once in the streets. At receptions for foreigners even high government officials, unable to resist the tempting sight of food, dive into the buffets. [This, it would appear, is not an unusual phenomenon even in peacetime. Ed.] Practically all food is rationed; perhaps 1 per cent is sold on the open market, where prices are prohibitive: 16 rubles for an egg, 100 rubles for a pound of meat, 250 rubles for a pound of honey. (The average worker makes 700 to 1,000 rubles a month.) Although barter is punishable by death, the government closes its eyes to most of the deals, and so one pair of half soles buys a pound of bread; a bottle of vodka is worth a peck of potatoes." It is stated that loss of granaries in the Ukraine and the Kuban, manpower shortages, and transportation troubles are believed to have reduced food supplies for the general public below the minimum health level.

In this same article are comparisons of the food situations in all the countries of Europe, especially those under German control, based on data from two new publications of the mission of League of Nations officials now carrying on from Princeton University: *Wartime Consumption and Rationing* and the 1942 edition of the *World Economic Survey*. "Selective starvation," as practised by Germany, is explained and the results illustrated graphically by means of charts. A comparison of food consumption in daily calories per adult male shows Italy, Poland, and Greece to be even below starvation level, and all of the German-controlled countries, with the exception of Denmark, show marked decreases since 1939, Poland having dropped to 50 per cent of her food consumption level for 1939, and Belgium to about 58 per cent, France to 70 per cent, and Finland to 72 per cent. Jews, Greeks, and Poles, as well as the inhabitants of central Yugoslavia and occupied Russia, have become the "untouchables" of the Nazi caste system. The Jews in Poland, where they were sent by the Nazis from all parts of Europe, are entitled to merely half the bread and sugar rations of the Poles. Food prices on the black markets have soared to fantastic heights, but since most capital has been confiscated, few can afford to add to their rations from illegal sources.

The effects of these low rations are illustrated by figures such as the following: Before the war the average death rate in Athens was 40 persons a day, while last winter it rose to 500 and at times reached 1700. For Warsaw, 17,800 cases of typhus were reported in 1941, among which 15,750 were Jews, whereas in 1938 no deaths from that disease had been reported. In Italy, France, Belgium, and Finland, the "danger zone" has been reached, with official rations ranging around 1800 calories per consumption unit, and as these nations are important to Hitler as producers of soldiers and munitions, there is proof that not everything in Europe has worked according to Berlin's wishes, according to the editors of *Fortune*.

The nations that can offer food, war industries, or both, are a little better off. These include the grain-producing countries of Hungary, Bulgaria, and Rumania, "where food standards are always deplorably low," and the "Germanic cousins" in Norway and the Netherlands, also Czechoslovakia. Stated rations are often unavailable in these countries, but black markets are well supplied from local sources and far more accessible than in Germany proper. Norwegians claim that they have organized bootlegging so efficiently that 80 per cent of the population are supplied with food at reasonable prices.

Technically, Spain belongs to the group of neutral countries including Sweden, Switzerland and Portugal who until recently have been fairly well off as far as food allowances are concerned, but civil war, Axis sympathies, and totalitarian methods have upset the



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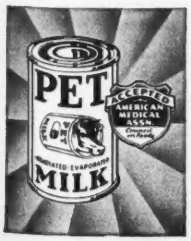

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country's economy so violently that food for a long time was even scarcer than in present-day France. Conditions have improved in the last year in Spain.

According to *Fortune*, the Nazi food order is caught in a process of disintegration and the carefully-planned system is gradually defeating itself, for several reasons: Instead of using rationing as a means of distributing equal amounts of foods among the people of a certain area, Germany has allowed the army to be exempt from rationing systems. Moreover, with abundant funds gained from plundering conquered areas, they are able to buy more food than they need and thus become regular suppliers of the black markets. Members of the German "master race" have been given extraordinary privileges, even among starving Poles and Greeks; and higher rations have been allotted to farmers in the hope that they would deliver all the surplus to the authorities and eat only their allowances (neither of which they have done). In fact, farm withholding is described as the chief source of all black markets. It is estimated that one-third of all meat and one-sixth of the wheat in France now go through illegal channels, and large numbers of pigs and cows have been slaughtered and quantities of eggs have been disappearing in Holland recently.

While bad management has aggravated the situation, the basic cause of Germany's food trouble is an inadequate supply. Soon after the fall of France, the blockade induced the Nazis to gamble on a short war and consequently they ordered mass slaughter of Danish livestock. This reduction in livestock has been felt ever since. A similar order has recently done away with 200,000 head of cattle in Norway. Both in 1941 and 1942 the Germans were forced to send substantial amounts of food to the troops in Russia. The scorched-earth policy worked so effectively that in February 1942, at the beginning of the sowing season, 130,000 peasants from the Ukraine were sent to Germany. War destruction, lack of manpower, fertilizer, and machinery, work constantly toward a decline in farm output and yields, and ever since 1940 unfavorable weather has aggravated the situation. The transport system is overtaxed, and underground movements, Chetniks, and R. A. F. bombings of communications do the rest. "Sum total: all these troubles have widened the gap between Europe's production and Europe's requirements from 10 per cent to probably 40 per cent, which is exactly what the British hoped to accomplish by sticking so doggedly to their blockade."

The recent loss of Tunisian phosphate fertilizer, which represented about fifteen per cent of German requirements, is a severe blow to future food supplies, especially the potato crop. African losses also account for futher reduction of rations of foodstuffs such as cocoa and vegetable oils. The control of North Africa by the allies closes the last big gap in the blockade of the continent.

"While the Nazis will thus be compelled to impose increasing privations on the occupied countries and even upon the German population, the United Nations have already started to build up stockpiles of foods in North Africa, as a visible promise—and as a bait—for the peoples of Europe, especially Italy and France."

RATIONING

. . . . Establishments are rationed in much the same way as ordinary consumers, but restaurant meals are supplementary to the consumer's individual ration. Canteens catering to heavy and normal workers receive larger allocations of rationed articles (in particular meat, sugar and fats) than restaurants catering to the public in general. By such means the administrative and other difficulties of highly differentiated individual rations are avoided and due flexibility in the allocation of different kinds of foodstuffs is retained. The composition of meals can be varied according to the supply available without impairing their nutritional value . . . . Point rationing . . . . though not as yet of great practical importance in food rationing, represents an interesting technical innovation by permitting the distribution of goods, the supply of which taken by itself is too small, or too erratic, to permit of regular rationing. Each consumer receives a card containing a number of points which are given a value in relation to certain specified goods—at present, tinned meat, beans and fish. These goods are in the nature of desirable, though not essential, additions to the average diet. Through the double mechanism of point and price changes, demand can be steered in the desired direction, new goods introduced and total quantities distributed according to changes in the supply situation. To sum up, the most outstanding characteristic of the British system is its high degree of flexibility, as opposed to the rigidity of the German system. Its function is not to regiment the total level of consumption, which is largely determined by individual demand for the unrationed foods serving as budget regulators, but to secure to the whole population the elements necessary to a sound diet.—*Wartime Rationing and Consumption, Economic Intelligence Service, League of Nations. New York: Columbia University Press, 1942.*

WAR MEANS RATIONING

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Book Reviews

How to Teach Nutrition to Children. By Mary Pfaffmann, Health Educator, The Boston Dispensary, and Frances Stern, Chief of the Food Clinic, The Boston Dispensary. New York: M. Barrows and Company, Inc., 1942. Cloth. Illustrated. Pp. 224. Price $2.

Many dietitians and nutritionists are familiar with an earlier work of these authors, *Food and Your Body: Talks With Children*. The book under review is an outgrowth of that, in reality a second edition made necessary by the newer knowledge of nutrition, changes in emphasis, and technological developments in the food field and elsewhere.

With the skill for which they are noted, the authors have prepared nine lessons in detail, just as they are to be presented to children. Each lesson is preceded by a brief explanatory message to orient the teacher and complete details on the necessary advance preparation of the lesson.

But this is more than a book telling how to teach nutrition to children. No adult, and certainly no dietitian or nutritionist could read, for example, the chapter on "Growing: Protein" which happens to be the first in the series, without gaining fresh enthusiasm, new ideas for teaching nonprofessionals at any age level, and a better understanding of proper emphases. The average child to whom nutritional facts are presented according to the lesson plans outlined by Miss Pfaffmann and Miss Stern will not be likely to forget the knowledge thus acquired.

Here is a fine example of nutrition teaching made vividly dramatic, far-reaching in its implications, and presented in such a way as to awaken anyone with average intelligence, child or adult, to the beauties and vistas of science—to the wonders of the life process.

Games and stories, suggestions for handwork which the child will cherish, charts to evaluate the day's meals, and apt quotations from famous scientists and teachers, which accompany each lesson, are other commendable features that make this book unsurpassed in its field.

Eat What You Want. A Sensible Guide to Good Health Through Good Eating. W. W. Bauer, M.D., Director, Bureau of Health Education, American Medical Association, and Florence Marvyne Bauer. Introduction by Morris Fishbein, M.D. New York: Greenberg, Publisher, Inc., 1942. Cloth. Pp. 263. Price $2.

Under the rather familiar and optimistic-sounding title, "Eat What You Want," the authors proceed to tell what you *ought* to eat which it so happens may not always be what you *want* to eat.

In the Introduction, as a matter of fact, Dr. Fishbein promptly dispels any wishful thinking that the book will let the bars down to uninhibited eating. While he believes that most of us eat "unintelligently," he tells us soothingly that "the human being is built with factors of safety which help him to overcome his ignorance."

In the first chapter Dr. Bauer lists many of the dizzy diets and dietary delusions which bedevil dietitians. He then proceeds to tell us what to eat after pointing out that eating "can and should be fun." His approach to the subject is sound, and follows the procedure which was accepted by all good teachers of nutrition before vitamins befuddled the thinking of many. Now that so many people have been led to believe that a druggist's box of vitamins, or a "vitalized" this or that will solve all their dietary problems, it is high time someone termed vitamins "the fifth dietary necessity."

The proteins, as their name implies, come first and are given first place in this book. In the chapter which follows, covering vegetables, fruits, and cereals, the doctor says a kind word for the doughnut and the "grossly libeled" cake, and calmly condones the occasional use of frequently frowned-on fried foods. A chapter aptly titled "Calorie Crazy Quilt" follows, which the dietitian, at least, will relish. The chapter on vitamins will be approved, too, by the dietitian and incidentally it would be salutary if this chapter could be required reading for all physicians, some of whom, at least, appear to believe that a shot of the "morale vitamin" will turn a lamb into a lion.

The chapters on kitchen economy, menu planning, buying, and food preparation, for which, according to the Introduction, Mrs. Bauer was responsible, are packed with sound suggestions of particular value at the moment. But the matter of food faddism evidently annoys Dr. Bauer, as well it might, for toward the end of the book he hurls another parting shot at food cranks in a chapter entitled "The Funny Food Faddist." It is pertinent to add that the aid of Ruth Cowan Clouse is acknowledged "for checking the technical aspects of the manuscript."

Laboratory Handbook for Dietetics. Compiled by Goodrin Thompson, Head Dietitian, Municipal Hospitals, Winnipeg, Canada, under the direction of Dr. Margaret A. Ohlson, Associate Professor of Food and Nutrition, Iowa State College. Minneapolis: Burgess Publishing Company, 1942. Paper. Spiral binding. Pp. 73. Price $1.25.

This is a beautifully arranged and very legible handbook. It is compact and at the same time sufficiently detailed to meet the needs of nutrition laboratory work and should also be helpful to practicing dietitians in planning and evaluating diets. Sets of recipes are included to aid students in analyzing food combinations and to permit them to recognize the wide differences in the approximate composition of the final product, depending upon both the kind and amount of ingredients used. To a large extent figures in the food tables represent averages and as the authors state in the Preface, any apparent inconsistencies in the stated analyses of certain foods, will serve, they think, to acquaint the student with the limitations of this form of dietary evaluation. A complete index adds to the book's usefulness.

In short, the purpose of the book is "to clarify the thinking of undergraduate students on the specific nutrients contained in an average diet rather than to stimulate interest in unusual food, or food combinations, and since simplicity is a prerequisite for the use of such material in crowded laboratory classes, only basic foods and recipes have been included. The student who has grasped the fundamentals may be encouraged to increase her knowledge of food by library study."

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Compilation of Diets. Prepared by the California Dietetic Association. Sixth edition. Los Angeles: Institute Press, 1942. Leatherette, loose-leaf ring bound. Pp. 178. Price $5 (plus sales tax for purchasers within the State of California only). Orders to be sent to Mrs. Marie Nelson, 814 South Rimpau, Los Angeles. Checks payable to California Dietetic Association.

The Committee on Revisions and Additions, namely, Katharine Brown, Ruth Melges, Ruth Bowden, and Elizabeth Hayward, chairman, deserve great credit for carrying the responsibility for the sixth edition of this useful compilation to a successful completion. The content of the current edition is well detailed in the descriptive folder. It covers the essentials of and daily guide for an adequate diet; a calculated foundation diet for one day; chart of daily allowances for specific nutrients; food preparation for preservation of maximum nutrient values; normal energy requirements; diet calculation data, giving diet formulas and vitamin conversion factors. This is followed by routine hospital diets; test diets and normals for stomach, kidney, liver and gall-bladder, blood, etc.; vitamin test normals; thirty-five special diets, giving dietetic principles, foods allowed and foods not allowed, with meal plans and sample menus. In each case the sample menu has been calculated to show protein, carbohydrate, fat and calories; also calcium, phosphorus, iron and vitamin A, thiamin, riboflavin and ascorbic acid. A group of frequently used tables, compiled from the latest and most authentic sources, including food, mineral and vitamin tables; recipes useful in preparing special diets; and a complete cross-reference index, complete the book.

It should be noted further that the compilation is in loose-leaf form, making possible the addition of new pages and the ordering of any number of individual pages—diets, menus, tables, recipes—which the physician or dietitian may wish to give out to patients. The price includes the binder and the complete 1942 edition. Reprints in booklet form of the food and vitamin tables are available to owners of the compilation at 10 cents each and to non-owners at 25 cents each. Supplementary pages of the 1942 edition, as issued, will be furnished to owners without charge.

Diet Manual. Prepared by members of the Medical and Dietary Staffs, Mount Sinai Hospital, Philadelphia. Third edition. 1942. Paper. Pp. 75. Price $2.50.

This manual, in loose-leaf binding to permit revisions and additions as needed, is intended only as a guide in ordering diets and in no way limits prescription diets. It follows more or less the plan of many other like compilations now in use, and contains sample diets, tables of food values and concise information on the so-called "normal diet." In addition, tables covering the acid-base balance, alkaline-ash foods, high and low-purine foods, etc., etc., are included.

When Doctors Are Rationed. By Dwight Anderson, Director of Public Relations, Medical Society of the State of New York, and Margaret Baylous, Therapist, Charleston General Hospital, Charleston, West Virginia. New York: Coward-McCann, Inc., 1942. Cloth. Pp. 255. Price $2.

In the Introduction to this book, Dr. Nathan B. Van Etten, past president of the American Medical Association, says: "Revaluation of medical services and facilities must be worked out in great detail. The authors of this book have analyzed available and prospective medical resources; they have studied the problem for many years, and are providing here, I believe, the first book to bring an accurate interpretation of medical service to the attention of the public." The book does indeed seem to fill a need which is more acute now that the number of doctors available to civilians has been cut by one-third and each remaining doctor will be expected to serve approximately 1500 people.

The immediate purpose of the book is to tell civilians how to select a doctor from those available, but the information given about the medical profession should be available to the public for its own benefit in peacetime as well as in war. The method used by the Procurement and Assignment Service (established by the A. M. A. with the approval of the Federal Government in October 1941) for selecting doctors for various purposes is explained, and this method is suggested to assist the public in choosing a physician. Steps in making a choice are set forth in outline form in the final chapter, under such headings as "What is his standing in the profession?" "What medical school did he attend? and did he follow this with an internship, and perhaps a residency?" "What is his reputation in the community?" "Has he received honors at the hands of his colleagues?"

There is excellent material in this book, sensibly and clearly written. Credit is given to women doctors, and nutrition specialists, for their work in the current war, and some of their outstanding achievements are described. The chapter on "How to Avoid Fakes and Quacks" explains the efforts of the A. M. A. and government agencies to combat quackery and refers the reader to these agencies for further advice. Other services which medical societies and public health agencies can render and are rendering for the benefit of the armed forces and civilians are explained. Sound advice is given on selecting a hospital, use of "home remedies," how to "be a good patient" (giving the doctor pertinent information over the phone, calling at reasonable hours when possible, settling money matters beforehand, etc.).

On the two important questions of whether we will have to go without medical care under the present "rationing" of doctors, and whether the rationing system will be a permanent institution in this country, the authors have this to say: There will be no actually dangerous shortage of doctors in any section; the Procurement and Assignment Service will see to this. (The "boom towns" are the only weak spot in the equitable distribution of medical care at present, and this is only temporary.) Therefore, "if the illness seems serious or there is the least doubt, call the doctor immediately. Regardless of how busy they are they will always find time for each patient. During war, national defense depends largely on national health." As to the second question, the authors hold no brief for socialized medicine under government control, contending that this has resulted in bootlegged medical care and worse in European countries. Instead, they express the opinion that "If the procedure of the Procurement Service proves workable through this war, it is ample proof that such a device could effectively work out a national scheme of equitable distribution of medical care for the nation on a peacetime basis. This will require no drastic change in the practice of medicine, which, to protect the public, should always be controlled by doctors, who will willingly submit to disciplines of their own creation."

6 Minutes to Fitness. By Lilyan Malmstead. New York: M. Barrows and Company, Inc., 1942. Cloth. Illustrated. Pp. 96. Price $1.50.

This is an explanation of the "backward bending" exercises originated by the author, with exercise photographs of the author. As to the value of the exercises, we are not in a position to state, but since the reader is cautioned that these should be taken only with a physician's approval, they are probably harmless and at least have the virtue of awakening interest in physical fitness. The chapter "What! No Dieting?" is likely to be misleading but in any event it will discourage indiscriminate dieting to lose weight.

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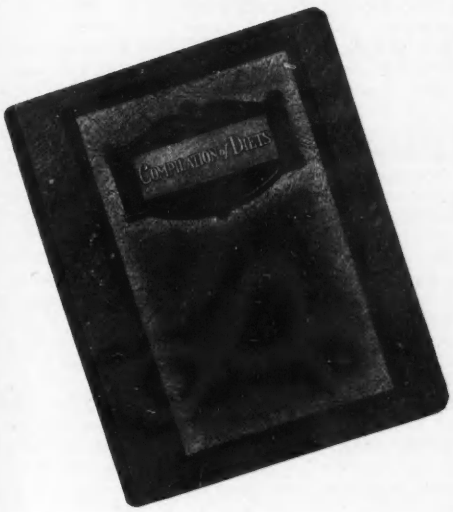

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Current Literature

Contributed by Helen Baughman, Dietary Department, Johns Hopkins Hospital, Baltimore; Quindara Oliver Dodge, School of Home Economics, Simmons College, and Women's Educati nal and Industrial Union, Boston; and the JOURNAL staff.

AMERICAN JOURNAL OF DIGESTIVE DISEASES

Vol. 9, December 1942

*Prothrombin and fibrinogen studies in chronic ulcerative colitis. R. C. Page and Z. Bercovitz.—p. 419.
*Studies on colon irritation. III. Bulk of feces. O. Wozasek and F. Steigmann.—p. 423.
* The physician's attitude toward vitamins. Editorial.—p. 433.

Chronic Ulcerative Colitis. Plasma of patients with chronic ulcerative colitis contains more fibrinogen than does that of normal adults. The only alteration in the blood-clotting mechanism would appear to be a frequent occurrence of low blood prothrombin level which may explain some of the continued rectal bleeding that occurs in this disease.

Colon Irritation. Constant low stool weight was observed in 33% of 45 normal and 40% of 58 individuals with abdominal complaints. A bulk-increasing effect of bran among individuals with low stool weights was seen in 86% of normal group and 60% of those with abdominal symptoms. Bran effected a bulk-increase in 53% of the group with average normal stool weights and in 57% of those with average normal stool weights and abdominal symptoms. Increased mucous secretion was found in 33% of normal subjects and 36% of those who had abdominal complaints. Comparing the cases with low bulk, increased mucous secretion was found in 53% of normal group and 39% of those with abdominal symptoms.

Physicians and Vitamins. The novelty phase of vitamin treatment has ended. Soon we shall assume that the patient is wise enough to take sufficient vitamins for his daily needs. Too much was at first expected of dietary supplements. There is no evidence that vitamin therapy has prolonged life or has been foolproof in increasing resistance to infection. Except in clear-cut cases of avitaminosis of specific type, vitamin therapy, while of great value in improving health, has been less effective and dramatic than chemotherapy and hormone therapy in the clinical battle against disease and death.

AMERICAN JOURNAL OF DISEASES OF CHILDREN

Vol. 64, December 1942

* Coconut water. E. S. Pradera, E. Fernandez and O. Calderin.—p. 977.

Cocoanut Water. The physiochemical nature of cocoanut water, especially the character of its derived proteins and the fact that it contains most of the essential amino-acids, argues for its value in nutrition and suggests valuable therapeutic application. A mixture of cocoanut water and evaporated milk might be used discriminately in infantile dietetics.

AMERICAN JOURNAL OF MEDICAL SCIENCES

Vol. 204, December 1942

* The two-dose glucose tolerance test. E. Wayburn and H. Gray.—p. 823.
* Pyruvic acid metabolism in diabetes mellitus. E. Bueding, H. Wortes and H. D. Fein.—p. 823.
* Studies of biotin metabolism in man. Part I. The excretion of biotin in human urine. Part II. The relationship between the biotin content of the diet and its output in the urine and feces. Part III. The excretion of two biotin-like substances in urine. T. W. Oppel.—p. 856.

Glucose Tolerance Test. The 2-dose glucose tolerance test is relatively free from the influence of fairly marked changes in the preceding diet. It is thus free from the confusion associated with the single-dose glucose tolerance test and is therefore superior when the antecedent diet is not known, as is usually the case. These differences in the two types of tests are dependent on the fact that the first dose of glucose acts as a constant balancing portion of the diet preceding the second dose.

Pyruvic Acid Metabolism in Diabetes Mellitus. In diabetes mellitus there is little or no increase in blood pyruvate following the ingestion of glucose. If insulin is then administered, a significant rise in blood pyruvic acid occurs.

Biotin Metabolism. Normal subjects on unrestricted diets excreted from 7 to 89 mcg. biotin per liter of urine or from 14 to 111 mcg. biotin per 24 hours. With ordinary diets the elimination varied from day to day, and throughout the day. There was a striking increase after a large dose of crude biotin was ingested. Biotin excretion was greater in the urine of those who ate well than of those whose food intake was poor. It was relatively constant for those who ate the same food every day. Values found in a variety of disease conditions were within normal range and even during periods of starvation were not abnormally low.

Diets of average normal composition contained from 30 to 40 mcg. biotin a day, which increased to 65 mcg. when liver was included. On a daily constant biotin intake, biotin excretion in the urine was constant for each subject but the average figures for different subjects varied widely. When diets of 35 and 65 mcg. biotin were taken on alternate days, the urine showed corresponding daily fluctuations. The average daily biotin content of the feces greatly exceeded the biotin content of the diets. There seemed to be some correlation between the biotin content of the feces and the content of the urine but none between the content of the feces and the diets used. The total biotin output in the urine and the feces was 3 to 6 times as great as the intake in the diet.

The material in urine which gives the biotin test by yeast growth assay can be separated into an avidin-combining and non-avidin-combining fraction, both of which have been

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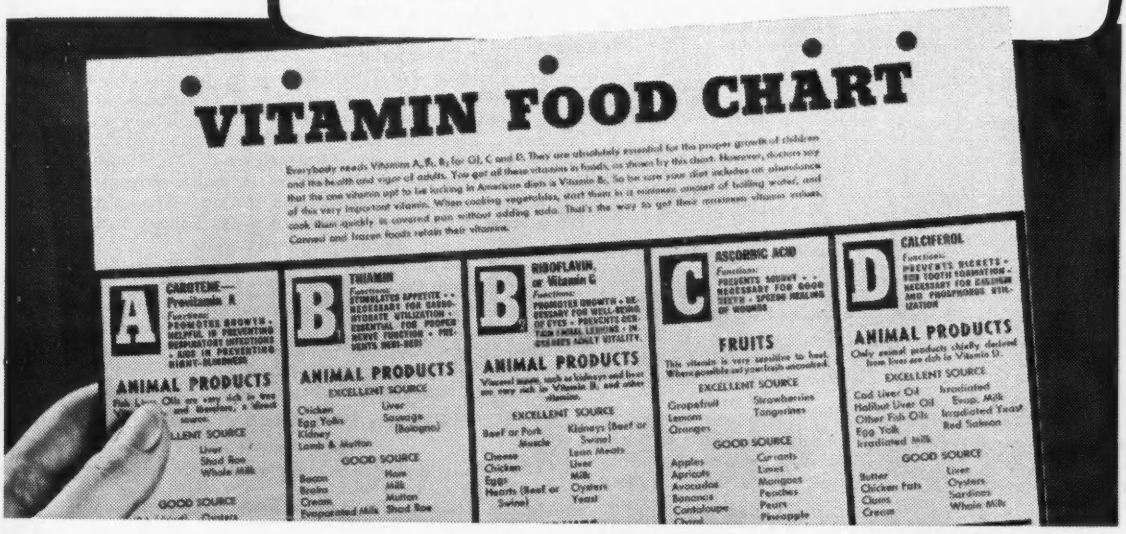

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found in all human urines tested and in the urines of dog, rabbit and rat. The avidin-combining fraction is probably biotin, and its excretion in the urine varies with the amount of biotin in the diet. Small amounts of it were excreted by patients taking large amounts of egg white. The quantity of non-avidin-combining fraction in the urine was not changed by altering the biotin content of the diet or by oral doses of biotin.

AMERICAN JOURNAL OF PHYSIOLOGY

Vol. 138, December 1, 1942

* The influence of rickets and of healing of rickets on the mechanical properties of the tibiae of the rat. A. A. Schiller, H. C. Struck and C. I. Reed.—p. 27.
* An attempted correlation of mechanical properties of bone with antirachitic healing and with molecular structure as determined by x-ray diffraction technique. C. I. Reed and B. P. Reed.—p. 34.
* The effect of meat and meat fractions on the fatty liver of the depancreatized and pancreatic duct ligated dog. E. P. Ralli and P. H. Rubin.—p.42.
* Decreased fat appetite produced in rats by ligation of the common bile duct. C. P. Richter and J. R. Birmingham.—p. 71.
* Creatinuria in man following the oral administration of caffeine. G. Bachmann, J. Haldi, C. Ensor and W. Wynn.—p. 78.
* The effect of a protein-deficient diet on the serum phosphatase and hepatic dye clearance of dogs. V. H. Hough and S. Freeman.—p. 184.

Rickets. A quantitative breaking test showed no residual defect in bones of healed rachitic rats if sufficient time was allowed on a healing diet. There is still question regarding metabolic residua determined by other than resistance to lateral stress. Results support conception of bone as a dynamically functioning organ participating in many phases of metabolism and affected by many metabolic functions.

Bone in Antirachitic Healing. Disorientation occurs in rickets and appears largely irreparable as judged by x-ray diffraction technique. It bears no direct relation to ability of bones to resist mechanical stress. Preferred orientation of normal bone is disrupted by many physiological and pathological influences. Whether disorientation has any physiological significance other than as an indicator of a type of metabolic disturbance was not determined.

Protein and Fatty Liver. It is suggested that two factors contribute to the fatty liver of the depancreatized and pancreatic duct-ligated dog: a state of protein depletion brought about by the impaired digestion and absorption of protein occurring in such animals; and the presence in meat of some substance or substances which are capable of producing fatty infiltration of the liver.

Fat Appetite After Ligation of Bile Duct. Following ligation of bile duct, 6 rats allowed access to butter and low-fat and high-carbohydrate mixed diet stopped eating the butter and increased their intake of the mixed diet. Following ligation of the bile duct, 11 rats allowed access to casein, dextrose, olive oil, cod liver oil, 5 mineral solutions, and yeast or liver powder, ate little or no fat, but large amounts of dextrose. They ate less yeast or liver powder than before operation, and showed no definite changes in appetite for the casein or the mineral solutions.

Creatinuria After Caffeine. The administration of sufficiently large doses of caffeine was followed by excretion of creatine in the urine. The amount excreted showed no relationship to the amount of caffeine ingested. Presence of creatine in the urine was not related to an increase in carbohydrate oxidation but to an increase in protein metabolism, though it appeared not to be a causative factor. These experiments suggest that alkalosis might play a significant role in some instances.

Protein Diet, Hepatic Clearance and Serum Phosphatase. In 34 experiments on 24 dogs it was demonstrated that removal of protein from the diet causes an increase in serum phosphatase and a decrease in the hepatic clearance of Rose Bengal. These changes occur relatively early in the protein-deficient dog. Addition of protein either as casein or cooked egg white will reverse these findings.

AMERICAN JOURNAL OF PUBLIC HEALTH AND THE NATION'S HEALTH

Vol. 32, December 1942

* Public health and civil defense in Great Britain during the war. W. M. Frazer.—p. 1319.
* Food and nutrition of the industrial worker in wartime. F. G. Boudreau and R. S. Goodhart.—p. 1335.

Surveys of the nutrition of populations. J. B. Youmans, E. W. Patton and R. Kern.—p. 1371.

Public Health in Great Britain. Generally the epidemiological situation has been satisfactory in spite of an increase in venereal disease, scabies, pulmonary tuberculosis and a small number of outbreaks of paratyphoid B. The Ministry of Food is responsible for the importation and rationing of all food and Great Britain in all respects today is adequately nourished. Cheap nutritive meals for workers, a system of national kitchens, introduction of a national wheat flour of 85% extraction, and nutritional surveys are a few of the methods employed. Rich and poor are treated alike. Especially noteworthy is the cooperation existing between the Ministry of Food charged with the duty of distribution, and the Ministry of Agriculture whose duty it is to encourage the production of food. The public health service has developed an extensive day nursery organization in addition to its many other projects.

Nutrition of Industrial Worker. Surveys show that our war workers are not adequately fed. A large proportion suffer from multiple but mild nutritional deficiencies and output must suffer accordingly. Interest is growing among the workers and their families, management, communities and states in improving industrial nutrition by providing adequate lunchroom facilities and health education.

ANNALS OF INTERNAL MEDICINE

Vol. 17, December 1942

* Control of hyperglycemia of obese "diabetics" by weight reduction. L. H. Newburgh.—p. 935.
* A high fluid intake in the management of edema, especially cardiac edema. F. R. Schemm.—p. 952.

Obesity and Diabetes. In studying the effect of reduction of weight upon the delayed utilization of glucose in 62 obese adults, glucose tolerance tests became normal in 77% of the cases. This suggests that these persons did not inherit an incurable disease of the tissues that produce insulin, but that hyperglycemia is a manifestation of obesity.

Cardiac Edema. The 50-year-old practice of restriction of fluids in edema appears incompatible with the principles derived from renal-function and water-balance studies. The aim of the new régime was threefold: to decrease ingestion of material essential to the formation of edema and encourage mobilization of sodium already retained by giving a diet restricted in sodium and yielding a neutral or acid ash; to increase and hasten normal effects of metabolic acids by administration of minimal amounts of acid drugs; and to facilitate elimination of sodium by administering water in adequate amounts. Diet therapy is as richly rewarded in massive edema as in cases of severe diabetes. Average water intakes ranged from 6000 cc. to 8000 cc. daily. For 8 years the high-fluid régime was successfully carried out on 402 cases.

ARCHIVES OF INTERNAL MEDICINE

Vol. 70, December 1942

* Effect of ulcer on acidity and neutralizing ability in duodenal bulb. J. E. Berk, M. E. Rehfuss and J. E. Thomas.—p. 959.
* Roentgen ray treatment of hyperthyroidism. M. H. Soley and R. S. Stone.—p. 1002.
* Obesity. L. H. Newburgh.—p. 1033.

Ulcer. The contents of the duodenal bulb are more acid in patients with duodenal ulcer than in normal subjects. Ability of the contents of the first part of the duodenum to neutralize, buffer, and dilute gastric chyme is in evidence

MORE VITAL THAN VITAMINS

Today, every dietitian faces an increasingly difficult responsibility . . . how to safeguard the Nation's health when sudden shortages bring almost daily dislocations to the diet picture. At such a time it's good to know that every day sees an increase in one supply more vital even than vitamins to proper diet . . . KNOWLEDGE.

Moreover, people trained in dietetics play an important part in interpreting new knowledge and applying it in the best public interest. It is to *trained persons*, therefore, that the Kellogg Company now makes available reprints containing valuable information on the comparative value of sources of dietary bulk. These cover important research regarding the laxative effects of ALL-BRAN.

New evidence on the relative value for laxation of various sources of "bulk" fibre is contained in a report from one of the leading universities. Results of feeding a test group of men a diet containing equalized amounts of fibre from common food sources indicated a great difference in the digestion of these various fibres. Of all the foods tested, the most desirable laxative action was produced by KELLOGG'S ALL-BRAN and by one of the raw vegetables—cabbage.

Write now for this timely literature to Department JADA 33, Kellogg Co., Battle Creek, Mich.

Look at all these extra nutritional benefits

KELLOGG'S ALL-BRAN is more than a splendid source of important "bulk"! This delicious cereal gives you valuable proteins, carbohydrates, minerals and vitamins. Every ounce—usual cereal serving—supplies:

IRON—35% the minimum daily requirement (almost three times the amount in whole wheat)

VITAMIN B_1—10% the minimum daily requirement (equal to the amount in whole wheat)

PHOSPHORUS—50% the minimum daily requirement (four times the amount in whole wheat)

RIBOFLAVIN—5% the minimum daily requirement (almost three times the amount in whole wheat)

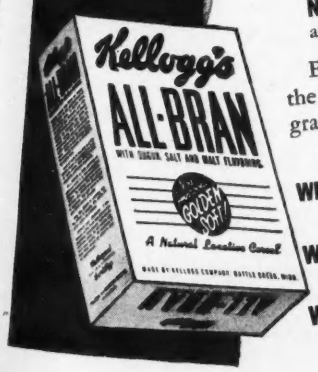
NIACIN—60% the minimum daily requirement (four times the amount in whole wheat)

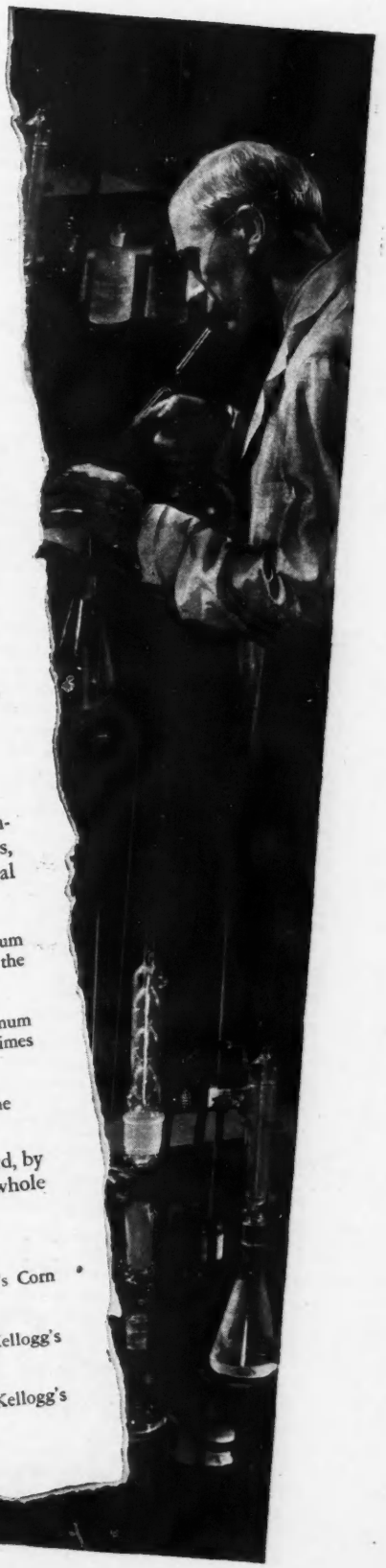
Every Kellogg cereal is made from whole grain, or is restored, by the addition of thiamin (vitamin B_1), niacin and iron, to whole grain nutritive values.

WHOLE GRAIN VALUE (Thiamin, Niacin, Iron Added) Kellogg's Corn Flakes, Kellogg's Rice Krispies.

WHOLE GRAIN VALUE (Thiamin Added) Kellogg's All-Bran, Kellogg's Pep, Kellogg's 40% Bran Flakes.

WHOLE GRAIN Kellogg's Shredded Wheat, Kellogg's Krumbles, Kellogg's Wheat Krispies.





in ulcer patients, but is greatly impaired. Patients with gastric ulcer appear to differ from normal persons not only in the direction of gastric hyperacidity but also in the defectiveness of neutralizing capacity of the duodenal bulb.

Treatment of Hyperthyroidism. Roentgen ray therapy was successful in bringing about subtotal destruction of the thyroid, relief of clinical symptoms, fall in the basal rate and a decrease of the thyroid gland to normal size.

Obesity. An extensive article concerning etiology of obesity, endocrine disorders, heredity, hunger and appetite, prevention and treatment is presented. It is concluded that weight can always be reduced by strict adherence to proper diet.

ARCHIVES OF PEDIATRICS

Vol. 59, December 1942

* Complications in acute illnesses. E. D. Andrews.—p. 784.
* The use of supplemental nourishment in the feeding of children. L. Grossman and R. A. Benson.—p. 799.

Complications in Acute Illnesses. Subclinical vitamin deficiencies, a complicating factor in most serious illnesses, must be prevented if the patient is to have an optimal chance. Dehydration and its associated syndrome must be prevented or treated early. Proper treatment or prevention of common complications in acute illnesses is just as essential as the treatment of the primary disease.

Supplemental Nourishment. Weight and height studies on hospitalized children show that when a chocolate malt milk drink was regularly added to routine diets, gains were greater than in control groups. Greater gains were found in children kept in bed. No allergic reactions to the chocolate drink were noted. Hematologic studies showed an average increase of 6%. Urinary excretion studies demonstrated the high content of thiamin in the nourishment. A small group of diarrheic infants showed decreased bowel movements, improved general condition, and no loss of weight when one-half ounce of this supplemental food was added to each of the 3 daily feedings.

BRITISH MEDICAL JOURNAL

No. 4272, November 21, 1942

* Circumcorneal injection as a sign of riboflavin deficiency in man. H. Scarborough.—p. 601.
* Clinical import of recent work on vitamin A. Editorial.—p. 613.
Food poisoning. W. Savage.—p. 615.

No. 4273, November 28, 1942

* Wanted: a nutrition policy. Editorial.—p. 640.

No. 4274, December 5, 1942

The anti-pernicious anemia factor. Editorial.—p. 668.
Food problems in the U.S.S.R. Editorial.—p. 670.

No. 4275, December 12, 1942

* The herring as a source of vitamins A and D. A. L. Bacharach, E. M. Cruickshank, K. M. Heney, S. K. Kon, J. A. Lovern, T. A. Moore and R. A. Morton.—p. 691.
The study of nutrition in Latin America. P. A. Escudero.—p. 698.

No. 4276, December 19, 1942

* Deficiency disease and academic evidence of subnormal vitamin metabolism. R. E. Wright.—p. 723.
Do doctors disagree about pasteurization? Editorial.—p. 727.

No. 4277, December 26, 1942

The science of health. J. A. Ryle.—p. 745.
* Communal feeding. E. B. Cunson.—p. 753.

Riboflavin Deficiency. Although circumcorneal injection may be an early stigma of ariboflavinosis it cannot be considered such unless supported by other clinical findings such as cheilosis, glossitis, dermatosis and ocular symptoms. It is suggested that certain subjects manifest a requirement for riboflavin which, for reasons unknown, is unusually large.

Vitamin A. Research on the influence of a shortage of vitamin A on the central and peripheral nervous systems has demonstrated that the degeneration observed is due to pressure exerted by the overgrowth of the bone contiguous with the affected tissues. Overgrowth of cranial bones may produce deformity, through pressure on parts of the brain.

Nutrition Policy. Evidences of serious nutritional deficiencies are rare in England. Effect of wartime dietary on health can only be judged by comparison with records before the war. Reports show a fall in hemoglobin in women and children, a rise in vitamin C deficiency, diminished growth rate and reduction in endurance in 11-year-old boys. Generally school children seem to be well provided for but a food policy must be judged by its effect upon nutrition.

Vitamins A and D in Herring. Average amounts of vitamins A and D in fresh herring were 40 and 250 I.U. per ounce and in canned herring about 8 and 50 I.U. The average daily contribution of herring to human intakes of vitamins A and D in England is insignificant.

Subnormal Vitamin Metabolism. Frank deficiency disease is much more common in China, Russia, India, Africa and Japan than in Great Britain and the United States. In vitamin A deficiency, night blindness evidently does not constitute a problem in southern India jungle tribesmen, as they can move rapidly through dangerous country on darkest nights. Much of the night vision problem in England is attributed to psychoneurosis.

Communal Feeding. There are 10,000 Royal Ordnance workers resident in hostels adjacent to factories. Provisions are made for recreation, rest and exercise. Communal meals are served and rationing operates as rigidly as in private homes by a system of pooling ration cards. The catering management is in good hands but more precise direction in preparation of foods is desirable. The health of girl residents in these hostels notably improves.

FOOD RESEARCH

Vol. 7, November-December 1942

* Measurement of texture in baked-potato tissue. M. E. Freeman.—p. 451.
* Gas production in storage molasses. G. J. Hucker and R. F. Brooks.—p. 481.
* Effect of freezing and of canning in glass and in tin on available iron content of foods. F. R. Theriault and C. R. Fellers.—p. 503.

Baked Potato Tissue. Evidence indicates the existence of two factors influencing the texture and cooking quality of baked potatoes: original moisture content and the degree of, or tendency for, cell separation. A method is outlined for a quantitative measurement of cell separation in baked samples. The close relation of this property to moisture content and judged texture scores has been clearly shown. These two factors may or may not be independently related and some practical aspects of cooking quality may be related to this question.

Foaming of Storage Molasses. The contributing cause of excessive foaming of storage molasses is the temperature at which the molasses is held as it may affect an amino-acid and glucose reaction. The critical foaming temperature appears to be approximately 40 to 45°C. The calcium oxide content of the molasses, if below 2% calcium oxide in the ash, does not appear to be a significant factor. Micro-organisms may play a minor part in excessive foaming in certain types of molasses if conditions have allowed the presence and development of gas-producing, heat-resistant types. The greatest activity of these gas-producing types is in the range at which molasses is usually stored, *i.e.* 25 to 65°C. However, the effect of heat even within these ranges of temperature is of far greater significance than the reaction of micro-organisms.

Effect of Freezing and Canning on Iron Content of Food. Commercial quick-freezing of foods was found to increase the availability of iron slightly. Canning in glass had little

Front line to keep the nation strong

AMERICA is the best-fed nation in the world. And this is due in no small way to the work of her teachers and home economists.

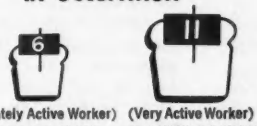
For they have pointed the way to nutritional needs and have helped guide the country's eating habits into channels that will best guard her health.

Now with the stress and activities of war this work becomes increasingly important. It is the front line in keeping the nation strong.

Everyone is working harder and using up energy faster. And since the source of food-energy is the diet, it must be replaced by eating sufficient amounts of the high-energy foods. To be balanced to today's needs, diets need nourishing foods—like bread.

In the past few years, bread perhaps has been somewhat neglected. But with hard work and action replacing sedentary occupations and leisure habits, it again should take its rightful place as the foundation food of normal diets.

HOW BREAD CONSUMPTION CAN GO UP WITH A CHANGE IN OCCUPATION



(Moderately Active Worker) 6 SLICES PER DAY

(Very Active Worker) 11 SLICES PER DAY

This chart shows the desirable increase of bread in the diet of a man as he steps from less active to more active jobs. These quantities are in addition to grain cereals and increases in the meat, potatoes, fats and other foods consumed.

Physicians and nutritionists have always recognized bread as one of our best sources of carbohydrates, of protein and, when made with milk, of calcium. It is easily digested, and lends itself to countless dishes that pique the appetite.

Whole wheat bread long has been recognized for its nutritional advantages. Now enriched white bread, too, is widely accepted for its nutritive value. Bakers supply it enriched with Vitamin B_1, niacin and iron according to the recommendation of the Food and Nutrition Board of the National Research Council.

With these facts in mind, we think you will agree that bread is basic in our nation's diet – especially in wartime. It has taste appeal, variety, convenience, low cost and unusually high food-energy value.

MOST GOOD BREAD IS MADE WITH FLEISCHMANN'S YEAST

The yeast used by most of the commercial bakers of the country is Fleischmann's. Many bakers enrich white bread by using Fleischmann's Enriched Hi-B_1 Yeast, thereby insuring an even distribution into every slice of valuable quantities of Vitamin B_1, niacin and iron.

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75 years of good yeast for good bread

Bread is basic

or no effect on total and available iron in foods. Foods canned in tin showed changes in iron content somewhat correlated with their hydrogen-ion concentrations. No change or slight gains in iron were observed with the vegetables, and considerable gains in iron were observed with the more acid product, peaches. Red sea perch, with a *p*H of 6.9, lost half of its total iron and nearly all of its available iron when packed in tin cans lined with zinc enamel (C-enamel). Iron gained from the cans seemed to be nearly 100% available.

JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

Vol. 120, December 26, 1942

* Handbook of nutrition: XI. The water soluble vitamins. C. A. Elvehjem.—p. 1388.

Vol. 121, January 2, 1943

* Handbook of nutrition: XX. Feeding the aged. E. L. Tuohy.—p. 42.
* Insulin resistance. Editorials.—p. 52.
* Thiamine requirements of man. Editorials.—p. 53.

Vol. 121, January 9, 1943

* Dietary conditions in industry. R. Goodhart.—p. 93.

Vol. 121, January 16, 1943

* Clinical use of amino acids for the maintenance of nitrogen equilibrium. S. S. Altshuler, M. Sahyun, H. Schneider and D. Satriano.—p. 163.
* Insulin resistance due to infection in diabetes mellitus in man. J. A. Greene and G. F. Keohen.—p. 173.
* Syrup substitutes. Editorials.—p. 196.
* Diabetes and military service. E. P. Joslin.—p. 198.

Vol. 121, January 23, 1943

* Hypochromic anemia in patients with deficiency of the vitamin B complex: Response to iron therapy with and without yeast. C. V. Moore, V. Minnich, R. W. Vilter and T. D. Spies.—p. 245.
* Treatment of severe diabetic coma with 1,820 units of insulin. C. C. Bailey.—p. 255.
* Vegetable juice cocktails. Council on foods and nutrition.—p. 258.

Vol. 121, January 30, 1943

* The prevention of liver damage and the facilitation of repair in the liver by diet. I. S. Ravdin, E. Thorogood, C. Riegel, R. Peters and J. E. Rhoads.—p. 322.
* Handbook of nutrition: XXI. Nutritive requirements in pregnancy and lactation. J. H. Ebbs.—p. 339.
* Postoperative nitrogen loss. Editorials.—p. 346.
* Advances in muscle physiology. Editorials.—p. 347.

Water-Soluble Vitamins. Of the water-soluble vitamins 9 crystalline factors, namely, thiamin, riboflavin, nicotinic acid, pyridoxine, pantothenic acid, choline, biotin, inositol, and para-aminobenzoic acid, are described by Elvehjem, who states that these include almost all of the B factors required by the rat. Other more recently discovered factors, according to him, because of their water solubility, should be classed under the B-vitamins. In addition, the author discusses the chemical formulas, functions, etc., of the remaining members of the water-soluble group: ascorbic acid, citrin, grass juice and milk factors. Elvehjem stresses the "need to use a little ingenuity in compounding a complete diet even from natural foods," and points out the fallacy of loosely prescribing vitamin concentrates to eliminate any possibility of dietary insufficiency. He cites a survey made by Mrs. Sarah Ellen Wenger at his request which indicates that the composition of vitamin concentrates varies as much in respect to vitamins as do natural foods.

Feeding the Aged. Protein adequacy must be maintained at all ages. As effort lessens and sedentary life supervenes, weight rise or fall should dictate the proportion of carbohydrate taken, and as much of this as possible should be from whole grain. Enriching flour may be a good expedient but the objection to dark breads should be lived down. Potato is the next best starch. For the obese, vegetables and fruits should act as "fillers" and provide appetite and zest for eating. The elderly should eat fat sparingly, even as the middle-aged should use it cautiously. The high-cholesterol sources (egg yolk, cream and animal fats) should probably be curtailed wherever body build, family history and other indications portend atherosclerosis. It is the one decisive indication for dietary restriction after full stature has been attained. The danger of high blood cholesterol is not universal. Alcohol for some is in the category of both refined carbohydrate and animal source fat. "As a vasodilator it inspires as well as flushes the aged." Tobacco is safer after 60 than before, because age has by that time made the blood vessels less elastic and labile. Food and water (hot drink) taken at regular intervals revive the old. Food becomes the best sleep producer even though early wakefulness follows. Fruit juices add the needed vitamin content. The teeth, gastric acidity, probably absorptive powers, vitamin storage—all begin to fail with age. We are able to compensate for these losses with vitamins, iron, calcium, hydrochloric acid and a balanced diet. "The mouth becomes the nutritional barometer of health."

Insulin Resistance. Factors known to cause insulin resistance include acidosis, infections, sepsis, overactivity of physiologic antagonists of the pancreas, namely the pituitary, the thyroid and the adrenal glands, and liver diseases, in particular hemochromatosis. Insulin resistance and insulin antagonism are thus only one aspect of the complex problem of carbohydrate metabolism, involving as it does the liver with its glycogenic and glycologic functions, and the synergistic and antagonistic effects of the various endocrine glands.

Thiamin Requirement. The extent of urinary excretion of thiamin is an index of its status in nutrition. The recommended daily intake of thiamin is approximately 500 mcg. per thousand calories. The average American diet prior to the advent of enriched bread and flour furnished only 320 mcg. thiamin per thousand calories. Thiamin subnutrition is probably common even among persons who subsist on what is considered a "normal diet."

Feeding in Industry. The proper feeding of industrial workers is a complicated problem the solution of which requires the cooperation of industry, labor, the community and the government. The evidence is so convincing that the nutritional status of large numbers of our industrial workers is below a level compatible with optimal health and physical and mental efficiency, that a decided acceleration in the rate at which remedial procedures are being instituted throughout the country is indicated.

Amino-Acids for Nitrogen Equilibrium. Solutions of amino-acids, used as the only source of nitrogen during preoperative and postoperative periods, stimulated poorly healing postoperative wounds, ulcers and burns to more rapid healing, the disabling symptoms of muscular dystrophies were abated during the time that the patients were receiving amino-acid solution; and the solutions were found to be equally effective when administered orally, intravenously or into the bone marrow.

Insulin Resistance. The occurrence of insulin resistance has been ascertained in patients with diabetes mellitus during infections or fevers, or to administration of histamine or epinephrine. Its occurrence was not related to the sex, age, height and duration of the fever or to the apparent toxemia. Insulin resistance appeared to develop more frequently in mild than in severe cases. As a rule, those patients who develop extreme insulin resistance with one infection will also develop it with subsequent infections or fevers.

Syrup Substitutes. After listing a series of agents used to prepare experimentally artificial syrups containing a water-soluble gum and soluble saccharin, it is concluded that syrups of satisfactory stability could be prepared with sodium alginate, Irish moss, tragacanth and locust bean

Packing the needed *Pick-up* in lunch box meals!

New, practical booklet shows how to prepare husky, healthful lunch box meals to reduce after-lunch let-down, help increase war production

A timely book . . . on a vital subject! With more than five million men and women in industry now carrying their lunch, it is essential to the war effort that these "production soldiers" eat the right kind of mid-shift meals. This 16-page booklet sums up the fundamentals of planning lunch box meals that help workers stay strong, vigorous and on the job. It carries the seal of acceptance of the Committee on Foods and Nutrition of the American Medical Association.

Send for free copy. Desk copies of "HOW TO PACK LUNCH BOXES FOR WAR WORKERS," without charge to home economists and teachers. Extra quantities available at 2c each. Write

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- Plan the Lunch Box with the Other Meals in Mind
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- Every Lunch Box Should Contain These Foods
- The Work They Do Makes a Big Difference
- When War Workers Eat Depends on When They Work
- Hints on Packing a Lunch Box
- Tips from the People Who Eat the Lunch
- Food Shortages . . . and Lunch Box Meals
- 30 Menus for Nutritious Lunches
- 69 Tested Recipes for Lunch Box Foods

Westinghouse *ELECTRIC APPLIANCE DIVISION*

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gum as thickening agents and saccharin as a sweetening agent. The thickening agents experimented with include citrus pectin, methyl cellulose, Irish moss, acacia, locust bean gum, alginate, apple pectin, karaya gum, glycerin and sorbitol. It is evident that the ideal and universal sugar substitute remains to be perfected.

Diabetics and Military Service. The diabetic quota useful for military service is relatively so insignificant, the hazards which both the diabetic and the government would undergo if they were inducted are so great and the need for their services in civilian occupations, where they would be less exposed to complications, so apparent, that the present rule to omit them from the draft appears proper.

Hypochromic Anemia. In 15 of 32 patients with hypochromic anemia associated with niacin deficiency, ariboflavinosis or multiple neuritis, lesions of more than one type of deficiency were observed. There was no tendency for hypochromic anemia to occur specifically in association with any one of these three deficiency states. If pyridoxine deficiency occurred among the patients in the Nutrition Clinic of the Hillman Hospital it was not accompanied by hypochromic anemia with high-serum iron levels. Iron therapy alone produced a satisfactory reticulocyte response and rate of hemoglobin generation. Brewers' yeast had no demonstrable effect in increasing the efficacy of iron therapy. The degree and type of vitamin B complex deficiency seen among these patients did not detectably interfere with iron absorption and utilization.

Diabetic Coma. A case is reported of a patient in severe diabetic coma who received 1820 units insulin in 7 hours, the second largest dose in a series of 536 consecutive diabetic comas treated. The patient was in his fourth attack of diabetic coma apparently brought on by a disregard of diet. Twenty minutes after entrance to the hospital the blood sugar was found to be above 1000 mg. per 100 cc. The patient was discharged 13 days after entrance to the hospital on a diet of carbohydrate 190 gm., protein 90 gm., fat 90 gm., and 14 units crystalline insulin and 52 units protamine zinc insulin. Other supplementary measures in treatment definitely take a secondary place to adequate doses of insulin.

Vegetable Juice Cocktails. Mixed vegetable juices are likely to be inferior in nutritive value to ordinary tomato juice. The ascorbic acid content in mg. per 100 cc. ranges from 3.9 to 13.0 or an average of 8.3, whereas popular brands of commercial tomato juices contain from 14.0 to 21.0 or an average of 16.8 mg. ascorbic acid per 100 cc. Further, the advertising of mixed vegetable juices is apt to be misleading since by implication the products contain the food values of each ingredient. It appears likely, too, that the vitamin A value of the mixed juices is less than that of undiluted tomato juice.

Diet in Liver Damage. The ingestion of carbohydrate alone does not afford maximal protection to the liver against a variety of hepatotoxic agents. Glycogen cannot be accumulated in the liver over a considerable number of hours unless the individual is receiving a caloric intake in excess of his basal requirements. Dextrose injected intravenously frequently fails to raise the liver glycogen because the total caloric requirement of the patient is not being provided. Chemical analyses of liver biopsies showed striking correlation between the obesity of the patient and the lipid content of the liver. A dietary regimen is effective in restoring the liver glycogen and liver lipid concentration of patients with severe microscopic damage to the values found in patients with simple cholecystic disease. The diet employed consisted of at least 20% protein, not over 6% fat and 74% carbohydrate. An adequate caloric intake is most important and was insisted on. Before operation most of the protein content was in the form of casein. Calf's liver following operation facilitates the regeneration of liver tissue most effectively.

Nutrition in Pregnancy. It is apparent that the pregnant and lactating woman requires more calories, minerals, vitamins and protein than the nonpregnant woman. The intake of these elements is influenced by the economic level. The management of the nutritional needs of the expectant mother requires more care in the selection of a daily diet than does that of a normal nonpregnant woman. The increased requirements for protein, minerals and vitamins, if they are to be met by the food consumed, necessitate some instruction in most cases. This instruction can be given by the physician or by the dietitian in the clinic. Simple directions stressing the importance of eating the foods which supply the greatest amounts of the protective food elements are usually sufficient. The importance of milk, citrus fruits, green and yellow vegetables and whole grain bread and cereal is obvious. Apart from vitamin D, the requirements for the other food elements can be met by the food, provided the income is adequate.

Postoperative Nitrogen Loss. It may be pertinent now to emphasize the importance of covering postoperative loss of nitrogen. Dextrose is widely given after operation to supply calories, yet non-essential tissue fat can easily substitute in part for it; nitrogen loss, on the other hand, must be met by exogenous sources unless depletion of essential body and plasma protein is to be avoided. In this sense nitrogen loss after operation deserves more serious consideration than caloric needs. The intravenous injection of protein nourishment with protein digests is certainly now as convenient as the administration of dextrose and saline solution; this contrasts strikingly with the inconvenience and expense of giving large transfusions of plasma as a source of protein food. Many hitherto unexplained postoperative complications are undoubtedly due to excessive nitrogen loss and will be avoided by extensive use of parenteral protein alimentation.

Muscle Physiology. One of the unsolved problems of muscle contraction has been the bridging of the gap between the chemistry of the energy-producing reactions involved and the physical processes of shortening and lengthening of the muscle fiber. New experiments have been presented which yield data for partial solution of this problem. Workers in a laboratory in the Soviet Union discovered that the enzyme adenylpyrophosphatase is either myosin itself or some closely associated protein, an observation which has been confirmed and extended in three other laboratories. The breakdown of adenylpyrophosphate is, of the various processes occurring in the metabolism of muscle, the nearest in time to the contraction of the muscle fibrils. The quantitatively largest part of the breakdown of adenylpyrophosphate probably occurs by splitting off of free phosphate under the influence of the enzyme adenylpyrophosphate, now suggested to be identical with myosin. The essential feature of excitation and contraction in muscle may be the liberation of the calcium ion in the vicinity of the adenylpyrophosphate grouping, which can thus, by the almost instantaneous catalysis of adenylpyrophosphate breakdown, make available a large amount of energy. The contraction of the myosin fiber would accompany the combination of the adenylpyrophosphate with the enzyme myosin, as indicated not only by the far-reaching changes in myosin observed optically and accompanying the enzyme-substrate combination but also by the enzyme action itself. With this concept the energy-producing phosphorylation cycles become coupled with the physical changes in the myosin fiber observable during shortening and lengthening. Indeed, myosin now becomes a "contractile enzyme."

JOURNAL OF BIOLOGICAL CHEMISTRY

Vol. 146, December 1942

* The inhibition of rat growth by nicotinamide. P. Handler and W. J. Dann.—p. 357.

BUY WAR BONDS AND STAMPS

"Butter that won't melt at 110°? ...Tell it to the Marines!"

Down on the equator, where joint U. S. forces have landed, fought and raised the flag, the long arm of science reaches out to serve our fighting men.

One example: *A preserved butter for export that will not melt at 110 degrees!*

This food is only one of many National Dairy products now being used by the armed forces of Democracy all over the world. It takes its place beside the numerous scientific developments in the care and handling of milk and milk products as basic human food.

And National Dairy research is probing farther and farther into the potentialities of milk . . . developing, for instance, a milk fiber that is light and warm and looks like wool . . . opening new doors to the farmer, the manufacturer and the consumer.

National Dairy processes milk and many milk products for millions of American homes.

By rigid adherence to high standards of purity all along the line . . . by a precise and far-flung system of *quality control* . . . by constant research . . . National Dairy daily helps to safeguard the health and strength of millions of American people.

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Originators of the Scaltest System of Laboratory Protection

* The effect of dicarboxylic acid administration upon the excretion of tyrosine metabolites by the guinea pig. R. R. Sealock.—p. 503.
* The distribution of nicotinic acid in feeds. E. B. Hale, G. K. Davis and H. R. Baldwin.—p. 565.
* A study of the availability of mesolanthionine for the promotion of growth when added to a cystine-deficient diet. D. B. Jones, J. P. Divine and M. J. Horn.—p. 571.

Inhibition of Growth by Nicotinamide. Inhibition of growth by inclusion of 1% nicotinamide in a 10% casein diet was prevented by the administration of methionine and by choline plus homocystine, but not by choline, betaine, homocystine, or cystine alone. At the 1% level, nicotinic acid had no effect upon growth but did induce fatty liver formation. Even 2% nicotinic acid had only slight effect upon growth. Fatty liver formation was prevented by feeding methionine, choline and betaine, but was aggravated by feeding cystine or homocystine. While ingestion of sufficient nicotinamide to produce a growth inhibition of 50 to 75% also resulted in fatty liver formation, when higher levels of nicotinamide were employed the growth inhibition was complete and only normal concentrations of liver fat were observed. At no level of nicotinamide ingestion was a significant decrease in the concentration of liver choline noted.

Vitamin C. Results emphasize not only the importance of the acid-base balance in questions of vitamin C saturation but also the consideration of the metabolic role of the vitamin.

Nicotinic Acid in Feeds. Oats, rye, corn, polished rice, low-grade flour, beet pulp, milk, and milk products are very deficient in nicotinic acid. Legume and non-legume hays and silages, germ and gluten products of corn and wheat, red-dog flour, high-protein supplements from plant sources, soy beans, and molasses ranged from 3 to 5 mg.% nicotinic acid. Wheat, barley, spelt, grain sorghums, tankage, meat and bone scraps, fish meal, and non-legume pastures varied from approximately 5 to 9 mg.%. Wheat middlings and corn gluten feed usually contained about 10 mg.% nicotinic acid and legume pastures varied from approximately 10 to 15 mg.%. Wheat bran (probably all cereal brans), yeast and liver are excellent sources.

Mesolanthionine. Mesolanthionine cannot serve in lieu of cystine in the diet of the rat for the support of growth.

JOURNAL OF HOME ECONOMICS

Vol. 35, January 1943

* Food in 1943. T. S. Harding.—p. 1.
* Food production goals for 1943. R. S. Kifer.—p. 6.
* Dehydrated foods for the Army. P. E. Howe and F. A. Cajori.—p. 8.
* Edible fats and oils: Two chemical characteristics. G. E. Vail and R. Hilton.—p. 43.

Vol. 35, February 1943

* Nutrition field work with low-income families. E. G. Welch.—p. 97.
Teaching nutrition to Coast Guard cooks. A. I. Driscoll and I. E. Harris. —p. 102.
* The national sweet tooth. Comment.—p. 106.

Food Supplies. Since March 15, 1941, the Administration has purchased for Lend-Lease nearly 1½ billion dollars' worth of farm products. At the top of the list stand meat, fish, and poultry. The bulk of the meat is pork, canned, cured, and frozen, but beef will soon start flowing. Second come dairy and poultry products, dried eggs and dried milk. Every third pound of cheese and every third can of evaporated milk has gone on Lend-Lease since March 1941. In some months 70% of our total cheese and dried milk production went abroad. The 1942 record will probably not be repeated in 1943 because farmers face rapidly mounting shortages of materials, equipment, and labor. In 1943 military and Lend-Lease buying will take about one-fourth of our agricultural production. Because of increases in food costs, families with low incomes—below $1,000—will probably have poorer diets in 1943 than those of the same income in the late '30's.

Food Goals. Beef output in 1943, measured in terms of live weight slaughtered, will be 7% above that of 1942. The goal for sheep and lamb slaughter is essentially the same as slaughter in 1942. Poultry producers are being asked to increase their production of chickens for meat by 28%, and to produce more turkeys than in 1942. A 10% increase in egg production based partly upon the chickens saved in 1942 for laying in 1943 and partly on a continued high rate of lay per hen, will not be sufficient in itself to meet expected increases in Lend-Lease and military requirements, so that civilian egg consumption may be slightly less than in 1942. Civilian consumption of dairy products will be below that of 1942. Farmers were asked to increase the acreage of dry beans and peas so that production will be at least as high as in 1942, and production of cereals in 1943 should be ample to meet all requirements. The rice goal would maintain production at a high level, and if yields are normal we can continue to supply the Caribbean and other areas with a portion of the rice formerly obtained from the Orient. The acreage goals for flax, soy beans, and peanuts are again to be increased in 1943, and farmers are requested to maintain production of sugar-cane and sugar beets. Approximately 2.4 million tons of sugar would be produced. The pack of such crops as tomatoes, peas, and snap beans is expected to be at least as high as it was in 1942. An effort is being made to dry as large a portion of the crop as can be handled in that manner. The production of fresh vegetables near points of consumption is being encouraged. Acreage goals for the production of vegetables during the winter are substantially the same as that for 1942.

Nutritional Values of Dehydrated Foods. Contrasts the proportion of the total intake of certain vitamins derived from various foods in the average field ration prescribed for troops in this country (Field Ration "A," composed largely of fresh foods) with that in a dietary of expeditionary forces where nonperishable foods, including dehydrated, are used. In the latter case, separate calculations have been made to show what differences would have occurred had all fresh or canned foods been used. Also gives the weights of individual vegetables and citrus fruits which are used in considerable amounts by troops in this country and those used in the expeditionary rations. In the latter case both the approximate weight in terms of fresh foods and the actual weight are given for comparison with Field Ration "A."

It is apparent that (1) vegetables and fruits are the major sources of ascorbic acid and carotene, and that the leafy green and yellow vegetables, including tomatoes, contribute approximately 50 to 70% respectively, of these nutrients, and (2) meat, milk, and the grain products supply the greatest proportion of thiamin, riboflavin, and niacin. The contribution made by canned meat is much lower and that of dehydrated may be even lower, especially after it is finally prepared for consumption. The ascorbic acid values of dehydrated vegetables were considered to be negligible because of losses known to occur during reconstitution, preparation, and service.

Should the canned leafy green and yellow vegetables be replaced by dehydrated foods, it will be important to process and package the dehydrated food in such a way that the gradual loss of carotene is minimized. Since considerable residue is derived from milk products and the other foods, the inclusion of dehydrated fruits and vegetables for the purpose of supplying bulk alone is open to question. Even though dehydrated vegetables and fruits may make only minor contributions to the total nutritional value of the dietary, it may still be desirable to include them for variety and interest. The foods chosen should be those most acceptable to the average soldier. Since the nutritive value of dehydrated foods is affected during storage the date of manufacture should be stated on the label. As soon as the information is available, the amount of ascorbic acid and carotene should be specified, preferably at the end of a definite period of storage. Furthermore, information should be available regarding the probable nutritive value of the

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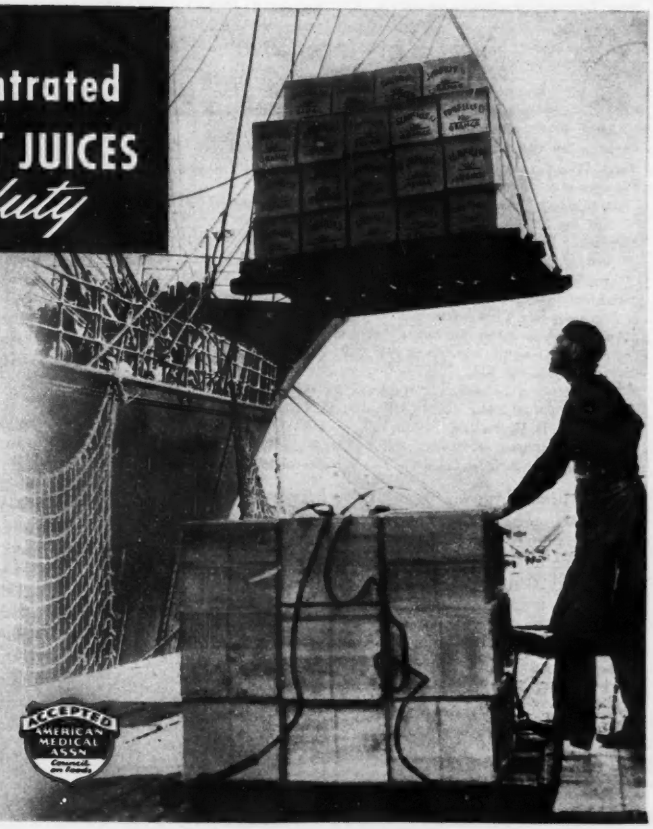

For our many friends and customers the recent government requisitioning of concentrated citrus fruit juices for the armed services will necessitate the more costly and less convenient use of available fresh fruits. As patriotic Americans, all of us agree that our fighting forces must and will be adequately supplied with the best . . . and that any resultant shortage on the home front will be cheerfully borne.

Whether the present ruling will be modified to permit a limited release of Sunfilled pure concentrated Orange and Grapefruit Juices for hospital and institutional use is unpredictable at this time. Significant, however, is the fact that the true-to-fruit qualities and economy features of Sunfilled products qualify them for this distinguished service . . . further justification of your continued use when present restrictions are lifted.

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food after it is reconstituted by the usual methods of preparation.

Smoking Temperatures of Fats. Describes method used in determining smoking point of fats and free fatty acids, as oleic. The smoking temperatures in this study ranged from a high of 245°C. to a low of 190°C. for the 17 vegetable fats and oils and from 234 to 174°C. for the 8 animal fats, heated in a 4-inch silica evaporating dish. The two combination vegetable and animal fats smoked at 209 and 170°C. There was an average drop of 2.2°C. in the decomposition points when the fats were heated in a 6-inch frying pan. The fuchsin bisulfite test for aldehydes resulted in still lower smoking points, averaging 24.6°C. lower than those obtained when the visual method was used. The percentages of free fatty acids before and after heating showed a wide range. The percentage of free fatty acids, as oleic, in fats tended to be inversely proportional to the smoking point.

Nutrition Field Work. It is concluded that graduate students gain a great deal from nutrition field work. "Nutrition became a vital science to those who carried it into homes where it was needed, to homemakers who would never attend nutrition classes or read nutrition pamphlets." The satisfaction of seeing food habits change after months of nutrition education is well worth the effort and students learn to study the problems of others, to be diplomatic; they find that encouragement and judicial guidance are better psychological approaches than preaching.

National Sweet Tooth. "The advertising of some candy firms, both on the air and in print, making exaggerated claims as to the nutritional value of candy in their somewhat desperate effort to get increased allocations of sugar and the redoubled efforts of various business interests to make the public feel that the sugar shortage is depriving people of a dietetic (or a morale!) need remind us that eternal vigilance is the price of progress. We home economists need to redouble, not relax, our efforts to tell the public the truth about the nutritive values of sugar, carbonated beverages, and candy."

JOURNAL OF NUTRITION

Vol. 24, December 10, 1942

- Nutrition of the guinea pig. H. A. Sober, G. J. Mannering, M. D. Cannon, C. A. Elvehjem and E. B. Hart.—p. 503.
- Pyridoxine deficiency in chicks. S. Lepkovsky and F. H. Kratzer.—p. 515.
- Response of bacteria, yeast and rats to peroxide-treated biotin. Intestinal synthesis of biotin in the rat. E. Nielson, G. M. Shull and W. H. Peterson.—p. 523.
- Periodic administration of anterior pituitary extract as affecting the metabolism of rats on diets of different composition. H. E. Archer, M. Kriss and L. Voris.—p. 535.
- The metabolism of arginine and leucine with special reference to respiratory exchange and heat production. M. Kriss and R. S. Bowman.—p. 547.
- An evaluation of the nutritional status of a population group in Madrid, Spain, during the summer of 1941. W. D. Robinson, J. H. Janney and F. Grande.—p. 557.
- The effects of a diet deficient in part of the vitamin B complex upon men doing manual labor. R. E. Johnson, R. C. Darling, W. H. Forbes, L. Brouha, E. Egaña and A. Graybiel.—p. 585.
- Relationship between vitamin A and iodine metabolism in the rat. R. E. Remington, P. L. Harris and C. L. Smith.—p. 597.

Nutrition of the Guinea-Pig. Three factors are required by the guinea-pig in addition to those required by the rat and the chick, namely: a factor or factors supplied by 16% grass, which is not supplied in adequate amounts by 16% yeast and 20 ml. winter milk; some factor or factors supplied by 16% yeast, which is not supplied in adequate amounts by 16% grass and 20 ml. winter milk; and some factor or factors supplied by 20 ml. winter milk which is not supplied in adequate amounts by 16% grass and 16% yeast.

Pyridoxine Deficiency. A diet deficient chiefly in pyridoxine is described. Pyridoxine deficiency in chicks is characterized by slow growth, convulsions, and other nervous manifestation. No dermatitis of any kind was observed in pyridoxine-deficient chicks.

Biotin, Bacteria, Yeast and Rats. Lactobacillus casei and the rat cannot utilize biotin that has been oxidized by mild treatment with hydrogen peroxide. Yeast does utilize biotin treated in this manner. Biotin syntheses varied with different rations, being highest on the stock ration, very low on a riboflavin-deficient ration and lowest when sulfaguanidine was added to a biotin-low ration. Preparation of a biotin-low ration is described and synthesis of biotin in voided feces was studied.

Pituitary Effects—Dietary Composition. Under all dietary conditions anterior pituitary extract decreased ketabolism of protein, but stimulated oxidation of nonprotein nutrients. The latter effect overbalanced the former so that the total heat production was increased. The extra heat resulted from a true stimulation of cellular metabolism, and not from accelerated oxidation of any particular nutrient.

Metabolism of Arginine and Leucine. In albino rats on a nutritively complete basal diet, virtually all of the nitrogen of arginine monohydrochloride and leucine was absorbed, metabolized, and eliminated in the urine; and of the energy of these two compounds, 64.8% and 90%, respectively, was metabolized. The dynamic effects of arginine and leucine varied between 45.8% and 137.2%, and 19.2% and 49.3%, respectively, of their metabolizable energy. In neither case does it seem justified to assume that the true value is a physiological constant.

Nutritional Status Evaluation. The nutritional status of 561 persons of low economic level was studied by family food consumption records, individual clinical examination, and laboratory determinations. Dietary records indicated an average intake of calories and calcium far below maintenance levels, and a protein intake of questionable adequacy. The levels of iron, phosphorus, thiamin, and ascorbic acid appeared generally adequate for maintenance; those for vitamin A and riboflavin at, or below, the borderline. Clinical examination revealed almost universal evidence of quantitative underfeeding. Classical qualitative deficiency disease was rare. Search for early manifestations disclosed a significant number of persons with skin lesions attributable to vitamin A deficiency, and a fairly high incidence, especially among females, of capillary invasion of the cornea which is probably due to ariboflavinosis. Many subjects had signs and symptoms of mild neural or neuromuscular disturbance of undetermined origin. Laboratory studies showed that about one-third of the subjects had mild macrocytic hyperchromic anemia. Incidence of hypoproteinemia was 11% among males and 5% among females. Serum vitamin A levels suggest that at least one-third of the subjects may have been inadequately fed in this respect at the time of the survey. Serum ascorbic acid values indicate that nearly all had adequate body stores of this vitamin.

Vitamin B Complex and Manual Labor. When men are doing hard physical work even for a few days, there is an imperative need for an adequate daily intake of vitamin B complex if physical fitness is to be maintained. Thiamin alone will not maintain the physical fitness of laborers in single daily doses of 2 mg. Whole dried brewers' yeast is a complete and adequate supplement for a diet grossly deficient in the vitamin B complex. When addition of vitamin B complex to a ration is indicated, a natural product such as yeast would seem to be a sure source of all the necessary components.

Vitamin A and Iodine Metabolism. There is no reason to believe that vitamin A deficiency is an etiological factor in the development of simple goiter in rats. There is apparently an increased need for vitamin A in hyperfunction of the thyroid, probably corresponding to the increase in rate of general metabolism, and a correspondingly decreased need in thyroidectomized animals; but in a degree of goiter

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in which iodine storage of the thyroid is decreased by 90%, the latter effect is not demonstrated. Deficiency of the thyroid hormone does not adversely affect the ability of the animal to utilize carotene in the cure of xerophthalmia, as compared with preformed vitamin A.

JOURNAL OF PEDIATRICS

Vol. 21, December 1942

* The treatment of ichthyosis with vitamin A. H. G. Rappaport, H. Herman and E. Lehman.—p. 733.
* The role of honey in the prevention and cure of nutritional anemia in rats. M. H. Haydak, L. S. Palmer and M. C. Tanquary.—p. 763.
* The influence of diet on the physiologic anemia of infants. K. F. Brokaw, M. S. Sedam and A. M. Cassirer.—p. 769.

Treatment of Ichthyosis With Vitamin A. The authors believe that some hereditary disorder of vitamin A may be involved in ichthyosis and that prolonged intensive treatment with vitamin A is definitely indicated. All 6 patients studied improved with this type of therapy; 5 who had shown dark dysadaptation improved also in this function and vitamin A deficiency was believed to have been an important etiologic factor.

Nutritional Anemia. Dark honey can play a role in the prevention and cure of nutritional anemia in rats, while light honey is less effective as a source of the blood-forming mineral elements.

Physiologic Anemia. Early introduction of cereals, vegetables, and eggs has no marked effect on the hemoglobin level or the red blood count of infants; but nutritionally speaking, that is in their growth, they are on the whole benefited by these dietary additions in the early months of infancy.

JOURNAL OF ROYAL INSTITUTE OF PUBLIC HEALTH AND HYGIENE

Vol. 5, October 1942

* Problems presented by the availability of low-cost synthetic vitamins. E. V. McCollum.—p. 187.
* Nutrition problems presented by low-income families. E. V. McCollum.—p. 194.

Synthetic Vitamins. Our dietary errors lie in consumption of so large a quota of refined cereal products and sugar that the quality of the rest of the diet is generally not good enough to supply the deficiencies of the former and maintain a high standard of nutrition. Milk and other dairy products, eggs, liver, kidney, sweetbread, muscle meats and leafy vegetables have been recognized as "protective foods." Development of rapid transportation, cold storage, canning and good marketing organization have made these foods available to all the entire year. Wheat is the cereal of preference everywhere but a greater proportion of its nutrient ingredients should reach the consumer. Unfortunately, fortification or enrichment of certain foods has received official sanction and great publicity with only a minimum of attention being given to natural foods rich in the valued substances. It is impossible for us to so supplement a refined staple as to make it fully equal to a diet composed of a mixture of well chosen natural foods. The enrichment program is unsound when considered on the basis of American agriculture or on the ground of nutrition education. The problem of inspection and control of "enriched" for fortified foods is likely to become a burden and involve considerable expense.

Nutrition Problems in Low-Income Families. Our social aim is to provide each individual, in a competitive manner, with the elementary needs for the realization of a full physical, intellectual and spiritual life. The machine age has given us things we need at a moderate cost with much less manpower used in production and so in the midst of plenty much misery and poverty have resulted from unemployment. No one has yet suggested a system wherein the small farm can be made a satisfactory source of family subsistence without some contribution from public revenue. Decentralization of industries to allow gardening is desirable but it is not possible to take care of all needy families in this way. However, it is clear that in order to afford the many their opportunity for living in health, decency and comfort, with time for mental and spiritual cultivation, the population density of every area must be so regulated as to thrive within the natural resources available.

MEDICAL OFFICER

Vol. 68, October 24, 1942

* Optimum nutrition for school children. H. Paul.—p. 133.

Optimum Nutrition for School Children. The Ministry of Food is to be commended for the preservation of the health of English children and for the general improvement in the dietary of the people. The diet is still not satisfactory, for a large section suffer from a definite vitamin C deficiency. It is recognized that physical perfection, mental agility, and courage are more common qualities in the well nourished. In order to achieve optimum nutrition of all children the largest possible number should be given school meals under suitable conditions. Sufficient sleep must also be emphasized. There has been a serious decline in the number of children of school age due to the hardships imposed upon the family by poverty and overwork. State help and nursery classes are suggested as possible incentives to larger families.

SCIENCE

Vol. 96, December 11, 1942

* The effect of dehydration upon the vitamin A content of eggs. S. M. Hauge and F. P. Zscheile.—p. 536.
* Dihydroxy-stearic acid and vitamin K deficiency. E. E. Lockhart, H. Sherman and R. S. Harris.—p. 543.

Vol. 96, December 25, 1942

A unified command and democracy in agriculture. J. D. Hoskins.—p. 9.
* The relation between urinary excretion of citric acid and calcium; its implications for urinary stone formation. E. Shorr, T. P. Almy, M. H. Sloan, H. Taussky and V. Toscani.—p. 587.

Vitamin A Content of Dehydrated Eggs. Results of biological assays indicate that little or no deterioration of vitamin A took place during dehydration of eggs. These samples compared favorably on a moisture-free basis, with potencies of approximately 44 I.U. per gram.

Vitamin K Deficiency in Rats. Rats normally do not require vitamin K in their dietary because they synthesize and absorb it from their intestines. However, a diet supplying all critical factors known to be necessary to the rat induced vitamin K deficiency when the fat of the diet was replaced by a synthetic fat containing a large proportion of dihydroxy-stearic acid. The deficiency syndrome was prevented and cured by the admistration of 2-methyl-1, 4-naphthoquinone.

Urinary Calculi. It is tentatively suggested that impairment of the mechanism by which the kidney adjusts citric acid excretion to urinary calcium output may be involved in the production of metabolic calcium urinary calculi by providing an environment favorable to the precipitation of calcium stones. An unusually high urinary excretion of calcium or an infection can predispose toward stone formation. Whether this postulated renal function operates through variations in citrate resorption or citrate production from precursors is now under investigation.

SCIENTIFIC MONTHLY

Vol. 55, December 1942

* Geography and tooth decay. B. R. East.—p. 582.

Value of enriched cereal in the diet

AMONG the major deficiency diseases of children—diseases which result from a lack of one or more nutrients in the diet—are: nutritional anemia, rickets, tetany, scurvy, pellagra, beriberi, night blindness.[1] Investigators in the field of nutrition are convinced that, in addition to the frank cases of the above deficiency diseases, there are many more borderline cases which are not limited to low income families. Beriberi and pellagra result from a deficiency of thiamine and nicotinic acid, respectively.

The method of choice in the prevention of these diseases, as well as in the treatment of borderline deficiencies which are the cause of sub-clinical cases, is the prescribing of an adequate diet. Borderline cases are more difficult to diagnose than the disease itself; and enriched cereals in the regular diet provide a valuable form of insurance against these borderline conditions.

Since cereal foods have a prominent place in the diet of children, it is advisable that enriched cereals be used in all cases. That the replacement of ordinary cereals by enriched types does have a practical effect has been shown by the work of three investigators. Their study shows that the intake of thiamine in the average typical American diet would be increased 64 per cent by the use of enriched cereals.[2]

PILLSBURY'S ENRICHED FARINA provides two of the vitamins needed to prevent deficiency disease or to cure borderline cases. Thiamine is provided in ample amounts compared to the calories furnished.

PILLSBURY'S ENRICHED FARINA contains per pound of dry cereal:

- 1.66 milligrams of thiamine (vitamin B_1)
- 6.0 milligrams of niacin (nicotinic acid)
- 6.0 milligrams of iron

It is low in crude fiber but high in energy value (calories).

[1] "Nutritional requirements of Children—A Resume," Wm. J. Dann and W. C. Davison. American Journal of Diseases of Children 63: 613, 1942.
[2] "Studies on The Average American Diet. I. Thiamine Content, R. L. Lane, Elizabeth Johnson and R. R. Williams. Journal of Nutrition 23: 613, 1942.

Pillsbury's *Enriched* Farina

Geography and Tooth Decay. Considerable evidence indicates that it is inaccurate to conclude that there is tooth decay of the same degree in the general population. Significantly less tooth decay occurs in the southern and southwestern states than in New England. Extensive surveys among school-age children show a relationship of caries to geographic location that is similar to World War I records.

AMERICAN RESTAURANT MAGAZINE

Vol. 26, December 1942

* War-time food costs and menus. H. W. Esperson.—p. 25.
* Cites importance of industrial feeding job.—p. 30.
* How the U. of Texas helps students form good eating habits. K. Ebert. —p. 61.

Wartime Food Costs and Menus. Profit adjustments in selling prices entail: raising the selling price to produce the desired cost per dollar sale; retaining the present prices but charging extra for the soup or appetizer; charging extra for the first course and dessert but reducing the listed prices slightly; including in the listed price only the entrée with its garnish and bread and butter; charging extra for all additional items that supplement entrée, even the beverage. Menus should not be made up far in advance.

Importance of Industrial Feeding. Examples of the part that factory food service is playing in the war effort in Detroit, Los Angeles, Cleveland, Boston and Chicago are cited.

University Nutrition Campaign. With the cooperation of the Nutrition Department of the University of Texas, four leaflets were issued stressing the importance of nutrition, treating the subject of protective foods, describing the daily basic diet and stressing the place of milk and dairy products in the diet. Charts, posters and graphs were used. The person submitting the best name for the leaflets received $5 in meal tickets.

BAKERS' HELPER

Vol. 78, November 21, 1942

* OPA trend to set bread price will bear watching. W. Werble.—p. 25.
Tempting cookies with low sugar content. W. E. Broeg.—p. 37.

Vol. 78, December 19, 1942

* Servicing mechanical refrigerators for prolonged efficiency.—p. 44.
New varieties in cheese pastries. J. A. Lambeth.—p. 52.
* Ideal time for sponge cake promotion. H. F. Schudlich.—p. 55.
Quaint Swiss honey cookies.—p. 56.
* Your fat can be stretched. J. I. Sugarman.—p. 32.
Agriculture Department's bread simplification program. W. Werble.—p. 35.

Vol. 79, January 16, 1943

* ARBA protests flour price increase.—p. 29.
* Making sugar replacements in cake batters and icings. W. E. Broeg.—p. 50.
* Agriculture may sponsor "Eat more bread."—p. 60.

OPA Trends. Curtailment in the sale of cakes and pies was recommended by the Council on Foods and Nutrition of the American Medical Association. The Agriculture Department's order freezing 90% of the nation's spray process milk solids production has caused an ingredient crisis. Paper containers and wrappers should be simplified.

Care of Refrigerators. For optimum efficiency, keep it clean inside and out, contract a local service man for one year's service, on forced convection units keep blades cleaned and oiled, take good care of the compressor, prevent all leaks, defrost regularly, be sure no electric connections are loose, be sure doors fit tightly, don't make adjustments unless sure of proper methods, don't leave door open longer than necessary, don't put hot materials into refrigerator, don't overcrowd; a refrigerator air circulator is recommended; keep belts dry and clean.

Sponge Cake Promotion. Foam cakes, which include angel food, sponge, sunshine and daffodil, also sponge cookies, should be featured now, for they are fat savers and conserve sugar and can be used without icing.

Fat. Bakers should be able to extend supplies of fat by decreasing variety. Shortening for automatic doughnut machines can be stretched 25% by not overheating fat, cleaning fat daily and kettle weekly, saving fat and putting one-half the old fat in the reserve tank on alternate days, using good hydrogenated vegetable shortening, checking speed of machine, keeping edges of doughnut cutters clean, making dough not excessively wet or dry, checking accuracy of thermometer and thermostat, and avoiding spilling and other waste.

Flour Price Increase. The president of the Associated Retail Bakers of American protested against the increased flour prices because many small bakers who have not been pan twisting bread, using wax paper, or slicing bread, cannot cut down on these items and so find the flour price a cold additional cost. The answer from OPA was that the matter would be looked into after the baking industry had operating experience with the new flour ceiling.

Sugar Substitute. Special combinations and large amounts of sugar in enzyme-converted corn syrup permit its use to replace sugar in cakes, cookies, icings, pie fillings, jams and jellies. With cake formulas, 10 to 50% of the sugar can be replaced with 1¼ to 1½ times this weight in syrup. The liquid ingredients may have to be adjusted. The amount of syrup to replace a given quantity of sucrose depends upon the per cent of sucrose in the formula and the amount of sugar to be replaced.

Eat More Bread. The Department of Agriculture is abandoning emphasis on whole wheat bread in favor of enriched white bread as a basis of the diet. Plans underway may either scuttle or shift the spotlight from the National Nutrition Program with regard to enriched bread and flour and probably all other foods.

BUILDINGS AND BUILDING MANAGEMENT

Vol. 43, January 1943

* When you hire girls to replace men. L. S. Flint.—p. 16.
* Proper painting increases lighting efficiency.—p. 22.
15 hints on maintaining electric motors. E. W. Fair.—p. 29.
* These new paints are water-thinned, but washable.—p. 36.

Women Employees. Western managers experienced in selecting the most efficient women employees and using them to the best advantage to replace men, recommend the hiring of young married women who live nearby, if possible, because they have more sense of responsibility, "are less flirtatious, and need the work." When hiring older women select those who have previously worked outside the home because they adjust more easily, in general, those "a little on the heavy side" because they're apt to be more even-tempered and efficient than those underweight. An advance physical examination will protect the organization as well as the prospective employee. Stress the waste of time entailed by idle conversation. Give the employee a definite day-long schedule of duties, and shift women employees from one job to another during the day wherever possible. Never ridicule women for this breaks spirit and cuts efficiency. Issue instructions and make criticisms tactfully. See that uniforms are properly fitted. Pay wages in check rather than cash.

Lighting Efficiency. According to findings of engineers at Westinghouse Lighting Division, it is important that ceilings be painted a flat or egg-shell white with a reflection factor of 80% or more, while walls may be of any light color with egg-shell surface and 50 to 60% reflectivity. Such a combination will increase illumination, provide better diffusion of light, reduce shadows and harsh contrasts between light sources and the ceiling and improve seeing com-

Here's how Swift's "Guest-Quality" Allsweet Margarine assures the nutrition needed in a spread

FOOD ENERGY
3,300 calories per pound

VITAMIN A
9,000 U.S.P. units per pound

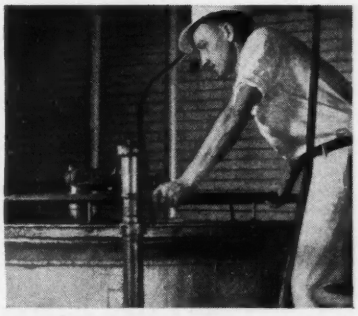
DIGESTIBILITY
95 to 97%

Guaranteed by Good Housekeeping

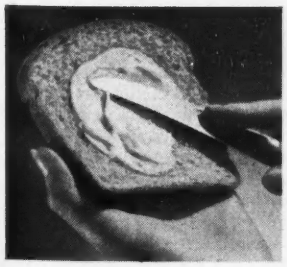
APPROVAL! In wartime or peace—the flavor and nutritive value and consistency and cooking quality of modern Allsweet are far superior to the oleomargarine of several years ago. Extensive research in Swift's great food laboratories, plus modern, carefully controlled production methods, result in an all-round fine money-saving spread. A spread which wins the Seal of Acceptance of the American Medical Association's Council on Foods, as well as the Good Housekeeping Bureau's Seal. Recommend it with confidence, use it and enjoy it.

RICH, WHOLESOME INGREDIENTS. From America's own farms come the energy-giving ingredients that go into Allsweet. Pure bland oils, and pasteurized skimmed milk—for the extra energy that wartime demands of the home front. Allsweet provides 3,300 calories per pound.

VITAMIN A IS ADDED. Pure concentrate of Vitamin A is added to Allsweet, assuring a minimum of 9,000 U.S.P. units in every pound. The average daily consumption of Allsweet (2 oz.), so fortified, furnishes 28% of the minimum daily requirement of Vitamin A for the adult.



CONTROLLED SANITATION. Strict laboratory control in every step of processing assures the highest degree of sanitation. Allsweet production is the result of years of Swift research in the world's largest commercial food laboratories. You can depend on Allsweet as a *wholesome* spread.



WIDE RANGE OF SPREADABILITY. Table spreads are taken from the cold refrigerator to the warm kitchen with temperature changes from about 48° to 90°. Yet Allsweet does not chip as it comes from the refrigerator, nor quickly get soft in hot weather.

COOKING QUALITIES—EXCELLENT! There's no danger or nuisance from spattering when Allsweet is used in the frying skillet. And for baking, Allsweet is a fine shortening that adds *milk-flavor richness*. It mixes easily, has excellent creaming qualities.

fort for workers. Glossy finishes cause a peculiar reflection of the light sources and an annoying glare.

Water-Thinned, Washable Paints. New resin-emulsion water-thinned paints, easily applied in smooth coats by inexperienced workers, give a quick-drying, waterproof, washable finish. New roller-coater eliminates need of scarce paint brushes.

FOOD INDUSTRIES

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Food Supplies. Food alone will not win the war, but "hunger can lose it." Anything that fails to keep up the United Nation's food supply, especially the processed, protective foods, will decrease the fighting abilities of our Allies. "The Food Requirements Committee under the Secretary of Agriculture has failed to cope with the problem." A "flock" of agencies in Washington, often acting quite independently of each other, "have the say." Machinery is obtained from one branch of WPB, packaging supplies from another, labor is under the War Manpower Commission, transportation facilities under another agency and OPA says what wages may or may not be paid, but labor says what must be paid. "A food administrator given authority to correlate, integrate and eliminate overlap of authority over good production, processing, and distribution is needed."

Paper Shortage. A shortage of white paper in 1943 is expected, due to the scarcity of lumberjacks.

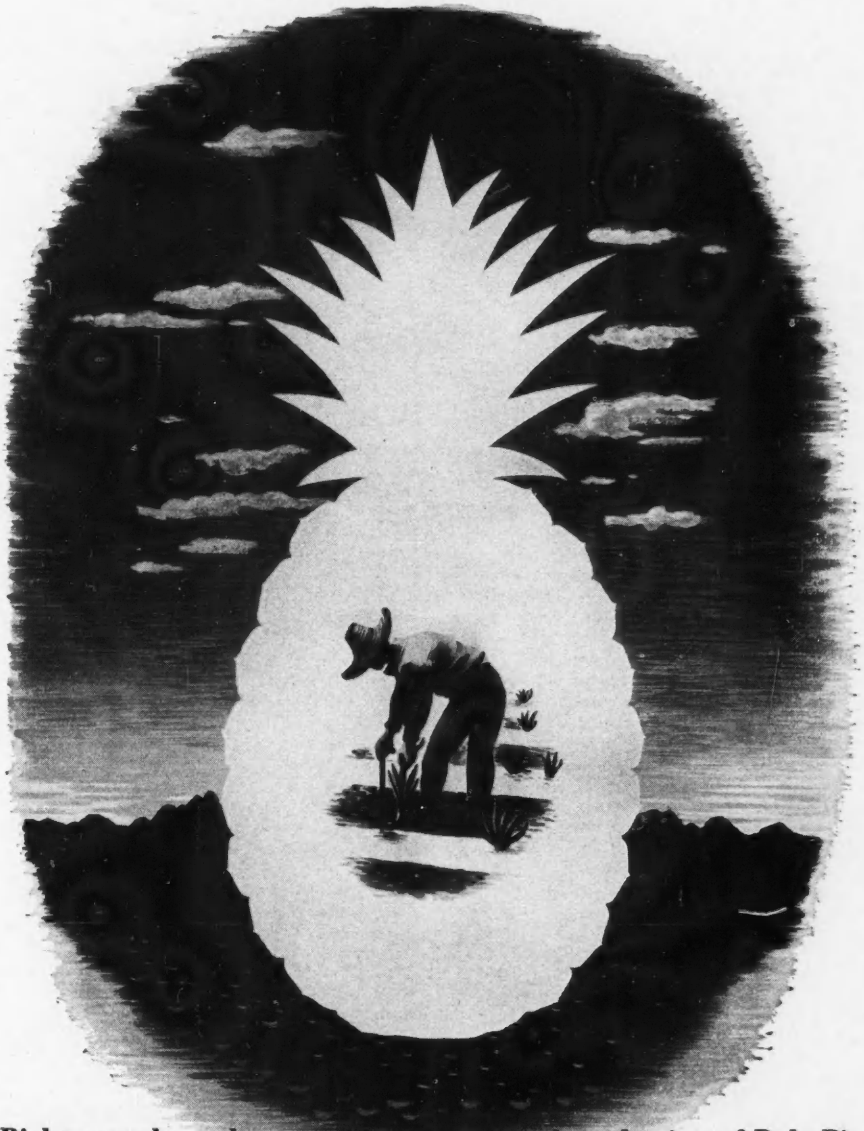
Improved Methods. Maximum production with acute labor shortages necessitates analyzing every job to see if it can be done better, more easily and more rapidly. List all details of the present method, question every detail as to purpose, necessity and method of execution and then develop better methods wherever possible.

Food Processing. The war has stimulated a big increase in output of canned foods in Australia. South Africa has found that if beef is frozen, then dried, it can be restored to original fresh state when required. When guava was found to have the highest vitamin C content of any known fruit, the Union of South Africa began canning 30,000,000 lb. jam, marmalades, and jellies annually. All types of foods are being canned there in quantity due to the war in the western desert. Germany and Japan are producing edible synthetic fats from carbohydrates such as the glucose sugars with more than a 40% yield. Britain, to conserve sweets, has found that the least acid fruits may be canned in a sugar syrup of 20° Brix density, while the most acid fruits require 35°. In the United States food processors under wartime pressure have made great strides in dehydration processes.

Vegetable Dehydration. Every dehydration plant should test the day's run by dehydrating and cooking samples and comparing these with the same product produced at least 4 months previously. Cleanliness of plants and employees must always be paramount. The engineering of dehydration operations, if based upon practical application of physics principles, would eliminate many wasteful and dangerous practices. Too little attention is paid to the finer points of operation which contribute to uniformity of product. Lack of temperature controls, scarcity of recording instruments, ignoring of humidity control in packing rooms, unconcern in coding lots of goods, limited numbers of adequately equipped and properly manned testing laboratories may prove costly. Specifications are expected to tighten.

Dried Eggs. Lease-Lend requirements for dried whole eggs required domestic egg-drying industries to increase production from 10,000,000 lb. to 250,000,000 lb. in less than a year. Packaging problems have been overcome by specifications which protect the hygroscopic egg powder against extreme atmospheric conditions during distribution and storage.

Vegetable Dehydration. Problem with vegetables is to remove water from tissues, retain nutritive constituents during storage, and rehydrate tissues when preparing for the table. Enzymes, molds and bacteria which may cause chemical changes may be controlled by speed and cleanliness in preparing the vegetables and by blanching in steam or hot water, preferably steam. Even then, oxidation, high temperatures and high humidity may develop disagreeable odors. During the drying process the tissues may be so altered as to make passage of water in and out difficult. Water must be removed from the cell cytoplasm and cellulose walls. When the cytoplasm is killed by blanching, drying or freezing no longer controls the passage of water



• Right now about *three-quarters* of our usual production of Dole Pineapple and about *one-third* of our usual production of Dole Pineapple Juice are going to our Armed Forces.

• Even if you can't get as much Dole Pineapple as you'd like these days, there's good news for the future. We're now planting pineapples for 1945. It takes two years for nature to grow a pineapple. But there are millions who say that the time is well spent. Pineapple's glorious flavor and vitamins will be yours again when the war ends.

HAWAIIAN PINEAPPLE PRODUCTS

DOLE

upon hydration. When heated to 150° F. the starch grains of potato cells gel and obstruct evaporation from the inner tissues if the slices are too thick, resulting in a gummy, lumpy, reconstituted product due to internal rupturing caused by vaporizing of trapped water and the resulting internal pressure. The cell walls composed of cellulose and pectic substances permit ready passage of water. In carrots the failure of the core to shrink as severely as the outer cylinder is due to lignified conducting cells which tend to maintain their shapes and hold other tissues in place. Shrinkage occurs first at the surface and progresses inwardly. If vacuum-dried after freezing, less shrinkage occurs than when dried by heat, but the tissues are ruptured by large ice crystals formed in freezing and carotene loss is greater. Starch-containing vegetables acquire a protective sealing from the gelled starch which permits storage conditions that other vegetables cannot withstand. Water-soluble vitamins B and C show significant relationship to moisture content, unlike fat-soluble carotene. Vegetable fats freed from cytoplasm upon blanching, spread in thin films over the cellulose surfaces, providing greater retention of carotene than in unblanched or frozen dehydrated vegetables.

Pectins. Certain types do not require sugar for jelling, are relatively stable to heat and storage and the melting points of their jellies can be controlled, making them valuable for certain types of salads, consommés, aspics and puddings. The pectin molecule is believed to have a long chainlike structure with 5 carbon rings and 1 oxygen atom with side chains of methoxyl groups or the corresponding acid. These methoxyl groups are readily hydrolized by chemicals or enzymes yielding the free acid which is easily neutralized, freeing metallic salts of pectin or pectinic acids. A high grade natural pectin may be split into shorter fragments of lower molecular weight, grade and viscosity, yet of essentially identical chemical composition. When pectins are extracted from naturally occurring sources, they require a certain balance between sugars, acid and pectin before jellies will form. That means at least 42% sugar must be present, but 55 to 65% is better. The sugar requirement for jelly has been reduced by utilizing the metal reactivity of low equivalent weight pectins, particularly the reaction with calcium, which causes jelly formation independent of sugar concentration. While any calcium salt will form lone sugar jellies, the soluble salts are not desirable because they supply ions at such a rate that the jelly curdles or precipitates. Acidity or *p*H control is not essential for low-sugar jelly formation but the rate of set and texture is controlled to some extent by it. Concentration of certain soluble salts exerts marked control on the melting point and rate of set. A jelly capable of remelting and remodeling can be prepared, the strength of which is dependent upon acidity, equivalent weight and molecular size of the pectin. Magnesium salts form equally good jellies of a lower melting point. Concentration of metallic salts is usually less than one-fourth per cent so no appreciable effect on flavor is evident.

Fire-Bomb Blaze. A fire started by an incendiary bomb has two parts, one consisting of the burning bomb and its immediate surroundings, the other, the remainder, called the "outlying fire." One employee should be assigned to the bomb-fire; others, the outlying fire, using fire extinguishers. The burning mass of metal may be covered with some preparation approved for extinguishing burning magnesium or if combustibles in the immediate vicinity are wood, paper or textiles, a jet or solid stream of water may be used. The bomb flares up when water strikes it. When the bomb-fire involves flammable liquids the best weapon is either a foam or a loaded-stream type of extinguisher. Vaporizing-liquid and carbon-dioxide are not effective on magnesium bombs but may be used on outlying fires. When live electrical equipment is involved in a bomb-fire the current should be cut off immediately. Every food plant located in a "target" area should be ready to meet an emergency.

Sweetener From Apples. A very sweet, bland, colorless and flavorless sugar syrup can be produced from apples. Apple juice contains 11% sugar of which 58 to 75% is levulose and the remainder dextrose and sucrose in about equal amounts. The resulting syrup is 20 to 30% sweeter than cane syrup of equal sugar content. As a food sweetener it will be superior to corn and sorghum syrups, equal to maple syrup and somewhat inferior to invert syrup and honey. A market exists for its use in ice cream, confectionery, fruit pie fillings, and as a conditioner in tobacco, but the cost will probably prevent its use for preserved and low-priced beverages. It is probably too sweet for table syrup but excellent for domestic cooking. Normally, there should be enough sound but unmarketable apples to produce 1 to 2 million gallons at an overall manufacturing cost of 60 to 70 cents per gallon. One ton of fruit will yield approximately twenty-one gallons 75° Brix syrup. The apples are washed in hydrochloric acid mixture to remove spray residues, then washed in water, ground and juiced in a hydraulic press. The juice is brought to *p*H of 7.8 to 8.2 in a lime slurry at 175° F. to accelerate the action of lime on the pectin. After a run through filter press, the clear, dark-brown filtrate is acidified to *p*H 5 to 5.5 with dilute sulfuric acid, resulting in a very light straw color which may be further clarified by filtering with activated carbon. The juice is then evaporated in vacuo to 75% solids. The largest quantity worked out by the laboratory, 15 gallons, produces 2.5 gallons syrup.

Frozen Dessert Stabilizer. Stabilizers in commercial frozen desserts serve to keep the solids together, check formation of large ice crystals during hardening, improve the viscosity and surface tension of the complete mix prior to the freezing of ice cream, facilitate the whipping of the mix during freezing, assist in retention in frozen products of incorporated air cells, influence the melt-down properties and stabilize the emulsion of butterfat which is brought about during homogenization prior to freezing. Gelatin, gums, algins, cereals and lecithin-bearing materials are available stabilizers for frozen desserts. Lecithin occurs in small quantities in all living cells, usually in association with fatty substances; a commercial vegetable lecithin is obtained from soy beans. Tests show that purified lecithin used in the stabilizing material showed improved texture, dipping qualities and general handling of the finished frozen products. It accentuated the flavor of orange and lemon ices and sherbets, is a good wetting agent and cuts down viscosity, thus facilitating the handling of the basic mix in the freezer.

Fruit Standards. Tentative grades for frozen strawberries are U. S. Grade A or Fancy, Grade B or Choice, and Off-Grade. These grades and the point system on which they are judged are described. Dried apples are defined as peeled, cored and cut, a portion of the moisture removed, and sulfured "sufficiently to retain a characteristic color." Apples may be cut into rings, slices or quarters, the moisture percentages varying with the cut and the grade. Grades include U. S. Grade A or Fancy, Grade B or Choice, Grade C or Standard, and Off-Grade. Descriptions of each grade are detailed. Frozen red sour-pitted cherries are prepared from matured fruit, properly drained, washed, stemmed and pitted, packed with or without sugar or syrup, and frozen and stored at temperatures necessary for preservation. U. S. tentative grades are Grade A or Fancy, Grade C or Standard, and Off-Grade.

Flour Substitutes. One-pound packages of dried skim milk for drinking, cooking, baking, making buttermilk or flavoring, soya flour to substitute a percentage of wheat flour in baking, and peanut flour to replace wheat flour in

When a Special Diet for Adults is Indicated

The two Gerber cereals, developed for infants in the Gerber Laboratories, have characteristics that make them suitable for a soft, bland diet for adults.

Here are the principle advantages of Gerber's Cereal Food and Gerber's Strained Oatmeal.

(1) **Nourishing Values.** Both cereals are fortified with Vitamins of the B complex as well as iron.

(2) **Low Fibre Content.** These cereals are processed to be suitable for the delicate intestinal tract of infants as young as three or four weeks. The percentage of fibre present in the dry cereals is low. When mixed with milk, it is even lower.

(3) **Appetizing Taste.** The pleasant flavor of these cereals makes them especially attractive to adults on a restricted diet.

(4) **Easy to Serve.** Both Gerber's Cereal Food and Strained Oatmeal are pre-cooked. Simply add milk according to the consistency desired.

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Baby Foods

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quick breads and cakes or to use as a binder and thickening agent are marketed by S. T. Jerrel Co., Birmingham.

New Cocktail Crackers. "Partisnax," made of whole wheat, bran, yeast, soda, white flour binder, vegetable oil spray and salts and packed in a cellophane inner wrap in an 8-oz. cylindrical container with a tinplate cap, have an unusual sharp tasty flavor. "Connoisseur Slices," product of Fleischmann's, are quality biscuits containing butter, fresh eggs, sugar, flour, soda, flavor and shortening.

Dehydrated Soups. The Borden Company is dehydrating for government use for the duration only, cream of onions, vichysoisse, cream of tomato and cream of green pea soups which are packed in a "thermo-phane" heat-sealed bag which is moisture and vaporproof and airtight.

Prune Butter. Natural California prune butter containing no added chemicals, sugar or preservatives, but retaining all the prune except fiber and pit, is recommended as a natural laxative and for use as prune whip, pudding topping, a spread or in cooking and baking.

Dehydration. Due to the war in Africa the demand for dehydrated foods is at least four times the present annual capacity. Large food processors may be forced to take on dehydration, and smaller plants now doing so will be asked to expand their operations.

Packaging Materials. A paper shortage may develop unless overpackaging and unnecessary packaging operations are avoided and maximum service is obtained from available materials.

Dehydrated Foods. In early November tentative specifications were issued for dehydrated apricot, prune, fruit spread and baked bean powders by the Quartermaster Corps.

Dried Fruit Freeze. Order M-205 has been changed so that sales to civilians will no longer occur automatically. Packers may sell dried fruits to the Army and AMA packers without specific allocation by WPB.

Dehydrated Pork. By March 1 dehydrated pork will be produced in 11 plants at the annual rate of 45,000,000 pounds for Lend-Lease and military use. Most of the dehydrated meat in the future will be pork, due to scarcity of beef. The process involves cutting boneless pork into cubes, thoroughly cooking it, then placing in vacuum dehydraters. It is packed in tins and sealed under vacuum.

Canned Cheese. Cheddar, limburger, brie, tilsiter, and camembert cheeses have been successfully canned, after a preliminary curing process, under vacuum in the presence of small amounts of magnesium or calcium hydroxide to offset gas evolved in the normal ripening.

Roller Dried Milk. To aid the milk-drying industry in supplying roller powder for domestic use to replace the spray powder set aside for government use, AMA will sell 15,000,000 lb. of the present stock of roller-processed dry skim milk to manufacturers and handlers supplying a spray-processed dry skim milk to the government.

Marking Cans. Because military operations often involve handling supplies under difficult conditions, WPB asks food canners to mark the content on each can by embossing, printing, lithographing or stenciling by hand so that it cannot be effaced.

Canned Sauerkraut. Order M-245 requires all canners, wholesalers, jobbers, and brokers to set aside all canned sauerkraut in their possession, or in transit between October 23, 1942 and March 31, 1943, without regard to previously existing contracts. These stocks may be sold only to the Army, Navy, Marine Corps, Coast Guard, War Shipping Administration, or agency of Federal Government.

Oysters. Oyster packers in 7 states are requested to increase by 40 to 50% the amount of oysters packed in containers to conserve supplies of tin and steel.

Canned Fruits and Vegetables. Order M-237 issued Oct. 30 relaxes restrictions so that canners of apple juice, cranberries, pumpkins, and squash may freely deliver up to 80% of their pack at any time up to April 1, 1943, and exempts deliveries of tomato pulp in 5-gallon cans, tomato paste in No. 10 cans, and peppers from quotas for purpose of re-manufacture.

Standardizing the Mediocre. To get maximum production and maintain price ceilings at the lowest practical level, Washington is urging standardization of foods of mediocre quality. Companies interested in postwar reputation will have to devise a way to meet low ceiling prices with quality foods and without complete loss of profit, or disregard quality in the hope that acceptance can be regained after the war.

Chicken and Egg Production. Egg production for 1943 is expected to rise 6 to 8% over last year and even with increasing Lend-Lease requirements, per capita civilian supplies should remain about the same. Although supplies of chicken meat will be larger this year due to meat scarcity, they may not meet the demand.

Food Costs. From October 17 to November 14 commodity prices moved from 104.2 to 104.6, grain prices from 90 to 93, and food price index from 106.8 to 107.2. Beef and pork loins, lard, eggs, cheese, butter, imported food commodities and canned food, except where new pack prices were announced, were unchanged.

Spray-Drying System. A spray-drying system for dehydration of liquid food products or liquid and solid mixtures such as purée vegetables, consists of an indirect heating unit where drying air is heated, a concentrating unit where part of the moisture is removed, a drying chamber where final drying occurs. Milk, eggs, gelatin, meat, poultry, potatoes, onions, carrots, spinach, tomatoes, and soy beans have been dehydrated by the process.

Protective Coating. A protective, transparent resin coating ("Resi-Flex") for metal, wood, fabric or paper materials can be adjusted to accent resistance to alkalies, inorganic acids, oils or alcohols, and scratches.

Wet Strength Paper. An "aqualized" paper with high strength when wet, substitutes for cloth and burlap for potato bags, crate linings, meat wraps, and frozen food locker bags.

Vitamin C Content of Chicken. In canning chicken there is distinct increase in vitamin C retention when pressure kettles are used in place of steam-jacketed open kettles. Canned poultry showed a higher vitamin content per unit than raw meat due to the contribution from broth during cooking. Special commercial packs varying only in precooking gave an average of 6.6 mg. ascorbic acid per 7-oz. can for the open kettle and 10.9 for pressure-kettle precooking.

Canned Salmon Sterility. Since mechanical vacuum packing has replaced steam exhaust, organoleptic examination of 108 cans of salmon representing 13 canneries showed all samples to be normal in appearance, flavor, odor, *p*H culture, and to be bacteriologically sterile.

Vitamin A Stability in Baking. In bread, biscuits, white pound cake, and pie crust prepared with fats fortified with vitamin A, 80 to 100% of the vitamin survived baking process in all except pies.

Meat Patents. An edible oil saturated with carbon-dioxide prevents surface deterioration and dehydration during aging of beef. The cuts can then be trimmed before aging, making trimmings usable. The beef cuts are kept at 35 to 40° F. for 3 to 4 weeks in a closed container after immersing in carbonated oil. Tender and uniform cuts of meat are obtained by deep freezing in a mold under pressure of 50 to 250 lb. per square inch for 40 to 50 hours at 15° F., then thawing gradually, slicing and piling with grain of one slice at an angle to that of the one below.

Soy Bean Flour. A gravimetric procedure for determining soy bean flour in products is based on the presence of glycinin, a protein characteristic of this flour. Glycinin is separated from albumin and animal protein because it

SABOTAGE IN... YOUR KITCHEN?

In war times, any method of working that reduces the efficiency or shortens the life of equipment or that impairs the quality of finished products is SABOTAGE. Saboteurs in the direct pay of our enemies use poisons and bombs to accomplish these ends, but the total results of their work are negligible in comparison with the losses that result from unintentional neglect by loyal Americans.

For example, neglect to maintain kitchen equipment in good repair; failure to locate and replace worn parts before they ruin an entire unit; waste of fuel resulting from incorrect adjustment of valves and burners — all these hasten valuable equipment on its way to the scrap heap.

Recognizing their contribution to the national defense, the Government grants priority ratings to hospitals, enabling them to purchase and authorizing us to manufacture new equipment when vitally needed. This does not release hospital business managers and dietitians from responsibility to conserve their old equipment and to keep it functioning as long as possible.

No priorities are required for replacement parts.

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does not coagulate in water when heat is applied, and in turn from vegetable proteins by a series of solvent extractions and salting out procedures. Milk solids can be correlated from known constituents. The final precipitate is weighed as a copper proteinate. The process is simple, requires no special apparatus, but is time-consuming.

Apple Confections. A nonsticky, moldable confection can be made by mixing milk with apple juice or pulp at a temperature of 100 to 280° F. and at reduced pressures between 3 and 28 inches of mercury, and drying in vacuo at a moderate temperature. Proportions range from 2 parts of juice and 6 parts of milk to 3 and 5 respectively.

Caustic Peeling Method. A new peeling method for potatoes may be applied to other root vegetables and some fruits. Waste is reduced 17% and trimming cost 50% by the use of a strong caustic concentration. The potatoes are washed in a standard vegetable washer, and rinsed and drained in a rotary or squirrel-cage type of washer. They then enter the "digester" which is made of a nickel-iron alloy, with provisions for heating the caustic solution, keeping potatoes submerged and removal of potatoes from solution exactly on time. The final operations are cooling, washing and decortication in a hexagon tumbler. "The inventor will grant licenses of use during war."

Uses for Pectins. The first acceptable jellied salad has been developed by use of pectin-320 and tricalcium phosphate. This dispersible form of pectin can be added directly to an agitating liquid, whereas the regular form must be dispersed in a solid. Canned jellied consommé can be made with pectin-320, added to the soup stock rapidly while stirring, and the addition of a well-dispersed calcium slurry with a temperature above 175° F.

Pea Standards. The standard for canned peas has been modified by the Food and Drug Administration to permit "the use of traces of alkali for preserving the bright green color of peas," providing that products so processed are labeled to show that these materials have been added.

Grade Labeling. A price control program will be integrated with a standardized grade labeling system compulsory for the 1943 pack of canned fruits and vegetables. Foods packed for the armed forces will not be affected. The cost for grade labeling will be included in ceiling prices.

Orange Juice Standards. AMA standards effecting minor changes in grades of canned orange juice were issued on December 2, effective December 15.

Chocolate. Beginning December 15, WPB Order N-145 prohibits the use of chocolate or any material produced from cocoa beans in manufacturing or coating novelty items, miniature candy pieces, chocolate shot or decorating chocolate candy.

Fats. Supplies of fats and oils are at a low level and demands soar. Demand for other manufactured products has caused butter output to decline. Further restrictions on butter are expected in 1943. Lard and vegetable oil and shortening supplies will be larger, but the increased demand is likely to bring about a situation requiring rationing. There are possibilities of increased vegetable oil imports from Africa.

Cereal Cookery. Alkali number determinations have been investigated to find out if they are suitable to assess the degree of cooking (depolymerization) in starch or starch cereals. Results indicate that some hydrolysis takes place during cooking, and especially during toasting.

Transport Refrigeration. Canadian bacon is being successfully shipped in ordinary cargo vessels by means of refrigerating equipment that can be installed in 2 or 3 days in port.

Papain Tenderizing. The influence of various factors on papain activity in the presence of beef has been established. The recommended procedure for tenderizing is to paint unground beef with papain and then cook.

Condensed Milk. Use of enzyme-converted corn syrup to replace 50 to 100% of the sucrose in bulk sweetened condensed milk, whole or skimmed, is practicable, and the product should have normal keeping qualities.

Homogenized Milk. There has been a rapid increase in the use of homogenized milk, which is more readily but not more completely digested than raw milk.

Fruit Discolorization. Dilute thiosulphate solutions can be used to prevent discolorization of the cut surfaces of fruit and vegetables. Satisfactory results are obtained from concentrations between 0.05 and 0.5%.

Spray Residue. Apple cleaning to eliminate lead and arsenic residues has been investigated by the Department of Agriculture in cooperation with West Virginia and Maryland experiment stations. Presents complete data on the technique and results of washing under a wide variety of conditions.

HORWATH HOTEL ACCOUNTANT

Vol. 22, December 1942

* Would simplify menus in order to save food.—p. 2.
* War-time labor turnover in hotels.—p. 5.

Simplify Menus. Suggests that menus be simplified by expanding table d'hote service almost to the exclusion of á la carte, and by giving a choice only of appetizer or soup and salad or dessert.

Labor Turnover. The increase in number of employees is only 1%, but the labor turnover has increased from 9.81 to 18.77% over 1941. The least permanent employees seem to be elevator operators, dishwashers, and housemen, in order named. Waitress turnover of 15.20% is below general average of 18.77%. White-collar employees have a lower rate. The rate for engine room employees increased only from 8.98 to 10.64%, while that for mechanics decreased from 7.72 to 7.04%. No connection has been established between the rate of labor turnover and the existence of a union contract.

HOSPITALS

Vol. 17, January 1943

* The hospital diet at today's food costs. C. M. Connick.—p. 108.

Hospital Diet. In order to adhere to the standard of adequacy, the dietitian should periodically calculate a typical day's meal in order to be sure the daily diet is adequate. To set up an aesthetic standard, we must first decide how much we can afford to spend to make a diet attractive. At Massachusetts General Hospital certain expensive accompaniments (such as jelly, olives, pickles) have been eliminated for the personnel. There are no second servings of salads, desserts and breakfast fruits. Changes have also been made in patients' menus. Supervision by dietitians of the serving of all food eliminates waste through the adjustment of servings, meeting the patients' preferences, etc. Careful monthly inventory of all food supplies, and the issuing of identification cards to those entitled to hospital meals are ways of eliminating losses through thievery. The pay cafeteria for employees makes for economy through elimination of waste. Investigate brands of foods thoroughly, make a careful study of frozen eggs, frozen fruits, etc., and eliminate all unnecessary items in order to cut costs without unduly lowering the aesthetic standard.

HOTEL MANAGEMENT

Vol. 42, December 1942

* A significant nutritional luncheon.—p. 4.
How you may learn to train inexperienced help. J. B. Grande.—p. 14.
* How can we remodel and redecorate this year?—p. 24.

Vol. 43, January 1943

How Georgia hotel men are training new help. E. Mugford.—p. 18.
* Teach your employees the value of nutrition.—p. 29.

This is part of a series on matters of professional, educational and public interest, primarily related to nutrition and the scientific approach to the food problem, and giving the background of the products of General Mills. These messages are being disseminated through a number of professional and specialized publications . . . in the hope of providing material useful for the readers.

The Food and Nutrition Board OF THE National Research Council

WHAT IS IT? WHAT PURPOSES IS IT DESIGNED TO SERVE? HOW IS IT IN THE PUBLIC INTEREST? IMPORTANT FACTS YOU SHOULD KNOW ABOUT THIS QUASI-GOVERNMENTAL BODY

1. *Why was the Board formed?*

(*Answer*) This country learned a health lesson as a result of the draft in World War I. Of the first 10,000,000 men examined, 2,510,706 had to be rejected on physical grounds.

Accordingly, when our Selective Service program began in 1940, a group of prominent medical men were called to Washington to study the problem. Their studies high-lighted the importance of better nutrition as a corrective of the underlying conditions behind this high percentage of rejections, showed the need of a basic "better nutrition" program for the country at large.

As a result, a committee was formed now known as the Food and Nutrition Board of the National Research Council.

2. *Who are members of the Board?*

(*Answer*) The Food and Nutrition Board includes leading authorities in the medical, nutritional and biological sciences, many of them famous for their original researches. The Board also includes representatives of certain government services concerned with military and civilian health. It is virtually a "Who's Who" of authorities on food and nutrition problems.

3. *What are its principal functions?*

(*Answer*) The underlying purpose of the Food and Nutrition Board is to assist in the formulation of policies that shall lead to better national nutrition.

Its actual functions may be classified as: (1) advice on the best feeding of our armed forces; (2) counsel to all government agencies on matters pertaining to good health through food; (3) advice on the physiological values of foods and diets of other peoples and nations, as related to the war and postwar problems; (4) stimulation of food and nutritional research.

Briefly, the Board is our quasi-governmental "steering committee" on problems of food as related to health.

4. *What is our country's immediate nutrition problem?*

(*Answer*) War requires "all-out" production; maximum production calls for maximum morale and health. This in turn calls for immediate improvement in our country's nutrition level. Illness, absenteeism and such factors as "fighting spirit" and resistance to the stress of war are closely related to the nutrition problem.

5. *How has this problem been approached?*

(*Answer*) Obviously, one important task is to educate Americans to choose their diets more wisely. This educational task was begun with a National Nutrition Conference in Washington in May, 1941.

A further step—of far-reaching practical importance—was in addition recommended, viz.: the voluntary vitamin-and-mineral enrichment, by millers and bakers, of all white family flour and bread.

6. *Why was enrichment recommended?*

(*Answer*) White flour and bread contribute more calories to the diet than any other class of foodstuffs. Our cheapest source of food energy, they are consumed by almost everybody every day. At one stroke, their enrichment benefits the entire American diet.

The majority of all white flour, and all white bread,* is now vitamin-and-mineral enriched, significantly increasing America's intake of Vitamin B_1 (thiamine), niacin (another vitamin of the B complex), and iron—elements widely deficient in the American diet.

Through the leadership of the Food and Nutrition Board of the National Research Council, this major contribution has been made to America's health.

Another advertisement on the work of the Food and Nutrition Board of the National Research Council will be published in a forthcoming issue.

*The enrichment of white bread is now compulsory.

General Mills, Inc., of Minneapolis, Minn., the country's largest processor of basic cereal grains, construes it as a social responsibility to keep abreast of the thinking of bodies such as the Food and Nutrition Board of the National Research Council, which are working in the public interest. General Mills has accordingly taken a leading position in bringing the benefits of enrichment and restoration of cereal products to the public. Some of General Mills' leading products are illustrated here.

All brands of family flour sold by General Mills have been enriched since June 1, 1942, or longer, including DRIFTED SNOW "Home-Perfected" Flour—also all flour in Sperry Pancake and Waffle Flour. Sperry Wheat Hearts also contain whole grain values of wheat's important vitamins and minerals.

The enrichment of bakers' white bread can be accomplished through the use of Enriched Flour, high potency enriched yeast, or by adding nutrients to bread doughs. General Mills has consistently urged bakers to enrich their white bread.

"Kitchen-tested" and "Home-Perfected" are reg. trade marks of General Mills, Inc.

Nutrition Luncheon. A luncheon served at the Savoy Plaza during this year's National Hotel Exposition illustrated the use of readily available foods high in nutritional value, and partial self-service. Bertha Nettleton, chairman of the New York Nutrition Committee, announced that four educational meetings on nutrition in restaurant and hotel would soon be held in New York. Ruth Laurance of United Fruit Company and Martha McCormick of General Foods showed how to prepare timely vegetable and fruit combinations and relishes. Dr. J. L. K. Snyder of Merck and Company talked about enriched bread.

Redecorating. Materials likely to be plentiful include beaver and plaster boards, imitation leather, wallpaper, paints, linoleums, tile, cement, brick, clay products, wood furniture, glass, paper rugs, fibre products, glass curtains, and mohair. WPB is carrying on experiments with substitute materials, including a cement sink and glass pipe to replace wornout plumbing.

Teaching Nutrition. Employees in restaurants should be made to realize the importance of their jobs. They should be told the value of correct eating habits and then have the proper food made available to them. They should be taught to conserve the nutritive value of the products they prepare and made to realize the importance of doing so.

ICE CREAM TRADE JOURNAL

Vol. 38, December 1942

* Cocoa. O. P. Petran.—p. 16.
* Turn the light on ice cream values.—p. 18.
War rulings affecting the ice cream industry. B. Terhune.—p. 21.

Cocoa. Based on the present 60% rate of rationing, the present stockpile of chocolate, without additions, will last an estimated 6 months. Since cocoa beans are primarily supplied by Africa, East India, and Central America, the shipping, which is controlled by the WPB and Maritime Commission, is the biggest factor.

Ice Cream Value. To make the public realize that ice cream stands near the top of the list of protective foods, the National Dairy Council is launching a 3-way attack using the regular Dairy Council program; educational work with schools, as well as other educational and professional groups; and publicity which started with a 3-page feature article in *Forecast*.

MODERN HOSPITAL

Vol. 60, January 1943

How to feed a patient.—p. 72.
* War-time economy in the kitchen. M. E. McKelvey.—p. 86.

Wartime Kitchen Economy. Since trained personnel has become markedly depleted and replacements are far from desirable, it is necessary to endeavor to retain employees by salary adjustments to the extent permitted by federal ruling plus the provision for overtime work. Female employees are used whenever possible. It is impossible to train employees who stay only 3 or 4 days. However, well-organized explicit routine cards are a great help if the employee can read. Menu adjustments have become necessary in order to meet the less skilled worker's ability. At this time substitutes to use for foods of higher price are unpredictable. One can no longer estimate accurately the advanced meal cost for today; we take what we can get and use it as best we can. Let nothing be wasted—time, energy, equipment or foodstuffs. Since the hospital kitchen budget is a large factor in the institutional budget, a plan for the maintenance, conservation and standardization of this department's needs must be carefully made and utilized.

NATION'S SCHOOLS

Vol. 30, December 1942

* Four steps in sanitation. H. M. Hall.—p. 44.
* Automatic sugar dispenser solves cafeteria rationing problem.—p. 67.

Vol. 31, January 1943

* Rating rural lunchrooms. V. Wheeler.—p. 44.

Sanitation. When school authorities are convinced that sanitation of eating and drinking utensils is essential to protect children from diseases, a committee of teachers and parents should be appointed to study the existing local and state health laws and the restaurant code recommended by the U. S. Public Health Service. Then investigation of the school's dishwashing and service facilities should be made. A program to teach children the importance of and procedure for preventing the spread of communicable diseases, likewise all persons handling food and equipment, should be put into operation.

Sugar Dispenser. An automatic sugar dispenser put out by Alpha Products Co. is simple in design, easily cleaned and contains no critical metals. It occupies one square foot of space and holds 10 lb. sugar and is said to save 50% on package sugar.

Rural Lunchrooms. Jefferson County Board of Education, Kentucky, has developed a score-card by which all school lunchrooms are rated on sanitary conditions, food, attractiveness of room, service, health practices, and courtesy. The success of this program is due to the cooperation of the principals, teachers, parent-teacher associations and the school board.

RESTAURANT MANAGEMENT

Vol. 52, January 1943

* Here's how! Care and purchase of uniforms. A. G. Mezerik.—p. 25.
* Fish purchasing guide. L. P. DeGouy.—p. 26.
* Small quantity cooking for high quality results.—p. 40.

Purchase and Care of Uniform. When buying a uniform, order coats by chest and height measurements, dresses by bust size, and trousers by waist and length. Inquire from the supplier if the garment is vat-dyed, preshrunk, and color-fast, if buttons are launderable. Check for underarm shields, pocket reinforcements and collar and seam construction. Keep uniform in good condition by using safe deodorants, under-arm shields, keeping it free from stains, hanging it on a coat hanger, and stitching tears, snags, frayed pockets, collars, cuffs, or buttonholes before laundering. In laundering use plenty of water, several changes of suds and rinses before bluing, and a light starch to stiffen. Do not boil with bleach. Close zippers before washing.

Fish Purchasing. In a quick reference chart the specifications, season, size and pounds, market unit, methods of cooking and type of meat of barracuda, bass, blackfish, bluefish, bluefill, bonito, carp, catfish, cavalla, cobia, codfish, dab and drumfish are enumerated.

Cooking Hints. Never cook more than 25 portions of string beans, broccoli, rhubarb, asparagus, cabbage, Brussels sprouts, okra or peas at one time. Cook baby carrots, turnips and beets in amounts not over 50 portions.

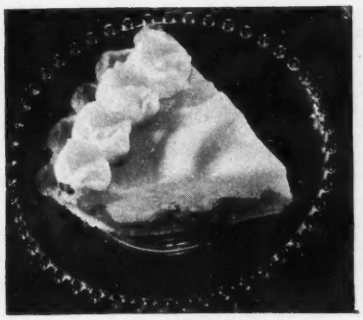
Up to one bushel of spinach, kale, dandelions, young mustard greens or escarole may be cooked in a single open container. Dry vegetables may be boiled in large amounts. Steam potatoes in small amounts frequently so they may be served as soon as cooked. Soups, stews, ragouts and sauces lack finesse and fine flavor when cooked in large amounts. Let a rib-roast of beef "set" at least an hour to become firm before carving. Delicate sauces should be made in quantities from 1 pint to 1 gallon. Base sauces, as brown sauce, can be made in 20-gallon lots.

Low cost...always appealing...
—and they save sugar too!

Lemon Cream Pudding
Serve JELL-O Lemon Pie Filling in sherbet glasses with lemon and mint leaf garnish

JELL-O Chocolate Pudding, home style
Serve JELL-O Chocolate Pudding in sauce dish with plain cream

JELL-O Cubes with Pudding
Arrange JELL-O Cubes and JELL-O Vanilla Pudding in parfait glasses in alternate layers



Fruited Cream Pie
Layer of sliced fruit in baked pie shell, covered with JELL-O Vanilla Pudding

Molded Fruit
Lemon JELL-O with Apple Ring. Peach half, pear half, or other fruit may be substituted

Try these new JELL-O and JELL-O PUDDING Desserts

MAKE that slim sugar ration go farther by serving JELL-O and JELL-O Puddings—which contain their own sugar!

These favorite desserts give your budget a breathing spell, too. About a penny a portion—that's all JELL-O desserts cost.

And the attractive, colorful dishes you can concoct! Fruit surprises, whips, molds, snows, tarts . . . an endless variety based on your own ideas or the free GF quantity recipes.

LOOK FOR these attractive desserts and dozens more in your GF QUANTITY RECIPE SERVICE. This service includes more than 300 tested quantity recipes, to which new ones are constantly being added. If you haven't this service, mail the coupon at right.

Now that JELL-O is using the "locked-in" process with all six popular flavors, you are always sure the dessert you serve will have all of its full flavor and richness.

JELL-O Pudding flavors are wonderful, too . . . deep, rich Chocolate, Butterscotch with a real brown sugar taste, and delicious Imitation Vanilla (synthetic for lasting flavor).

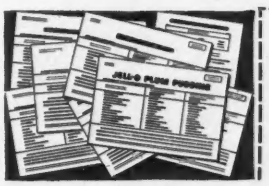
And be sure to try the new JELL-O Lemon Pie Filling . . . made with *real* lemon juice. Inexpensive and quick to prepare, it's perfect for pies, puddings and sponge desserts.

RATIONS? SHORTAGES? SUBSTITUTES?

Your GF man can give you help with many present day food problems. Consult him when he calls.

Jell-O & Jell-O Puddings

PRODUCTS OF GENERAL FOODS



FREE! GENERAL FOODS, Institutional Dept., A.D.A. 3-43 Battle Creek, Michigan.

☐ Please send me complete QUANTITY RECIPE SERVICE of tested recipes.
☐ Please send me your free JELL-O recipes designed for hospitals.

*Name*_____

*Institution*_____

*City*_____ *State*_____

News Notes

American Dietetic Association 1943 Convention. As announced by Frances MacKinnon, President, Jennie Barton, Presbyterian Hospital, Pittsburgh, and Grace Godfrey, Drexel Institute, Philadelphia, have been appointed co-chairmen of the 26th annual meeting, Pittsburgh.

American Home Economics Association Convention. The Executive Committee has tentatively scheduled this meeting as a work-conference, to be held at the Jefferson Hotel, St. Louis, June 18–21.

Helen Burns Commissioned Major. Helen C. Burns, who was appointed Superintendent of Dietitians August 24, 1942, was commissioned a Major January 12 in the Office of the Surgeon General, U. S. Army. It is understood that all dietitians now serving in the Dietetic Corps of the Medical Department, will soon receive commissions. A uniform has been designed for the members of the Dietetic Corps consisting of skirt, jacket, and belted overcoat of blue gabardine with tan shirt and maroon tie and a hat with a "soft crown suggesting a beret." Purse, gloves and shoes are brown.

Food Distribution Administration. Dr. Russell M. Wilder of the Mayo Clinic, Rochester, Minnesota, and formerly chairman of the Committee on Food and Nutrition (now Food and Nutrition Board), National Research Council, has been appointed head of the Consumer Programs Branch which, according to the *Food Field Reporter* for January 18, may be given another name. (*See* article by T. Swann Harding elsewhere in this issue). It is said that Dr. Wilder will study nutrition needs of the people, balance these against available foodstuffs, and recommend nutrition programs. As head of the Consumer Programs Branch it is understood that Dr. Wilder's responsibilities will supplant those of Consumer Counsel Donald E. Montgomery, who has resigned.

Nutrition and Food Supply: The War and After. This is the title of a special edition of the *Annals of The American Academy of Political and Social Science* for January 1943. The content covers the following fields: science and nutrition, food supplies and public policy, consumption and distribution, and production and processing. Among the authors of special articles are several prominent members of the American Dietetic Association and others well known to dietitians. The content of this publication, single copies of which are available to non-members of the Academy at $2 apiece, will be covered more in detail in a future issue of this JOURNAL.

The Food Situation for 1943. As this JOURNAL goes to press the *Food Field Reporter* for February 1 has this to say: "Look for a new type of public feeding program to replace the Food Stamp Plan, which goes out of existence March 1. It will be part of a definite program designed to raise the nutrition levels of the lower-income groups who are not getting benefits from wartime wages. . . . An unexpected phase of the new Food Administration is that it may take over supervision of production and distribution of vitamin products, which worries the drug trade no end. Vitamins are drugs, not foods, they claim. . . . A highly significant statement which passed almost unreported in the daily press was made by Lend-Lease Administrator Edward R. Stettinius, Jr. 'Beginning in December we started shipping Russia more food than to Britain. In 1943 more than half of all Lend-Lease food will go to Russia. Add to this quantities of food which will be required for liberated areas and you have a food shortage problem of the first magnitude.' . . . A slowly rising price level for foods and commodities in general of about half of one per cent a month, was forecast by Prentiss Brown, newly appointed head of the OPA, in a recent interview."

Explanation of Point Rationing. The December issue of *Consumer Education Service*, published by the American Home Economics Association, which gives an explanation of how the new ration book is to be used, may be obtained from the American Home Economics Association, 620 Mills Building, Washington, for 10 cents a copy.

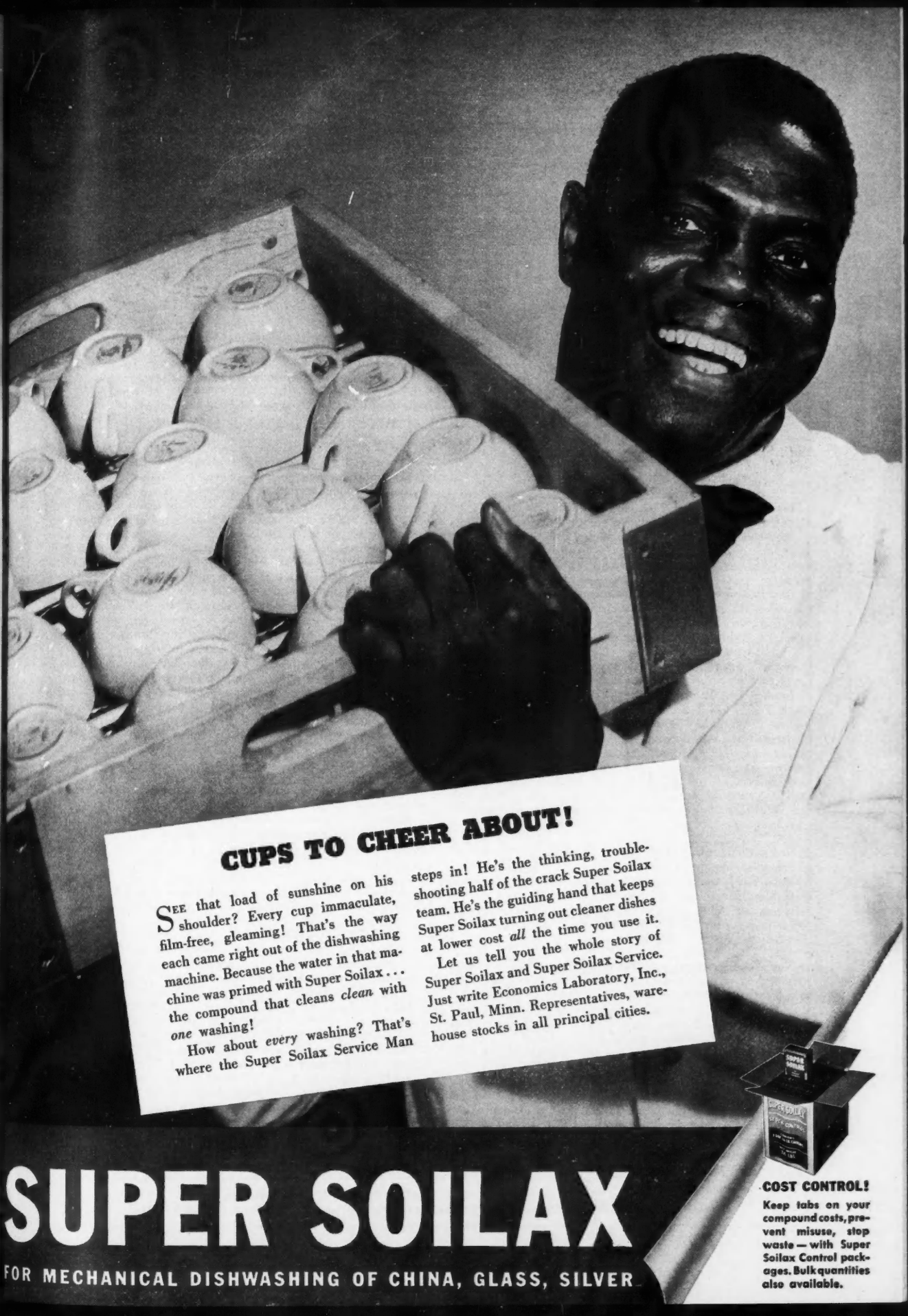
Three booklets recently published by the University of California Press, Berkeley and Los Angeles, give an excellent background for a fairly thorough understanding of what is happening in the food field. These are "Rationing and Control of Food Supplies" and "Control of Food Prices," both by J. M. Tinley, and "Planning for Total Food Needs" by E. C. Voohees. Both authors are members of the Department of Agricultural Economics. The books present data on the first World War, and the present policy of Germany, Great Britain and the United States in regard to food problems.

On application to Calla Van Syckle, Consumer Division, OPA, a bulletin describing the system of point rationing is available to readers of this JOURNAL who may wish to be better informed on this subject preparatory to addressing the public.

It is understood that a booklet entitled "How to Use Your New Ration Book" is available on application to Mr. Robert Rogers, OPA, Census Building, Washington D. C.

A very up-to-date account of the food rationing system in England appears in the January 18 issue of *News Week*.

War Films for Group Meetings. Destined to play an increasingly important role in the war effort, sound films showing the progress of the war and how individuals can be of greater assistance have been produced by various agencies of the U. S. Government. There is no charge for the use of these films which may be obtained from the Office of War Information, but distributors are permitted to make a service charge to the user not to exceed 50 cents for the first subject and 25 cents for each additional subject included in a single shipment. Transportation costs are



CUPS TO CHEER ABOUT!

SEE that load of sunshine on his shoulder? Every cup immaculate, film-free, gleaming! That's the way each came right out of the dishwashing machine. Because the water in that machine was primed with Super Soilax . . . the compound that cleans *clean* with *one* washing!

How about *every* washing? That's where the Super Soilax Service Man steps in! He's the thinking, trouble-shooting half of the crack Super Soilax team. He's the guiding hand that keeps Super Soilax turning out cleaner dishes at lower cost *all* the time you use it.

Let us tell you the whole story of Super Soilax and Super Soilax Service. Just write Economics Laboratory, Inc., St. Paul, Minn. Representatives, warehouse stocks in all principal cities.

SUPER SOILAX

FOR MECHANICAL DISHWASHING OF CHINA, GLASS, SILVER

COST CONTROL!

Keep tabs on your compound costs, prevent misuse, stop waste — with Super Soilax Control packages. Bulk quantities also available.

additional, and requests for films should be made three weeks in advance of the desired date. The following subjects are included among the list of 16 mm. films available: "Safeguarding Military Information," a dramatic exposition of careless talk and need for secrecy; and "Salvage," a presentation of the need for salvaging metals, fats and rubber, narrated by Donald Nelson. A third important offering is "Food—the Weapon of Conquest," distributed by United Artists, and available for rental at $10. This is a 35 mm. film and the name of a distributor in each locality will be forwarded upon application to the National Restaurant Association, 666 Lake Shore Drive, Chicago. One scene of this picture depicts the manner in which Hitler is using food to subjugate millions of helpless people; another relates how German scientists worked for years to discover a low-priced nutritious food, eventually found in the soy bean which when ground or flaked blends well with sausages, stews, bread and even egg dishes. Another scene shows how liver and fish oils may be used to reduce night blindness; "raw carrots and fresh fruit to keep nerves calm"; and "eggs and meat to build reserve energy." If requested by local groups, theatre managers will undoubtedly be willing to include this picture in their schedule.

Lenten Note. The Fish and Wildlife Service of the Department of the Interior has prepared a program promoting the wider use of hitherto neglected fish to help out the diminishing piscine supply. A considerable amount of unfamiliar fish, high in food value and delicious when properly cooked, is not used because of prejudice or lack of information regarding cooking methods. For material regarding the preparation of such fish and where they are marketed, write to Mr. Don Bloch, Information Division, Fish and Wildlife Service, Interior Building, Washington D. C. Conservation Booklet No. 27, "Wartime Fish Cookery," was planned to be ready for distribution in February.

An excellent 79-page booklet entitled "How to Buy and Cook Fish" has been received from the Atlantic Coast Fisheries Company, 4 Fish Pier, Boston. Attractively illustrated and spiral bound, this brochure offers information on how to buy, store, clean, and cook whole fish, fillets, clams, crabs, lobsters, smoked and salt fish, and suggests various recipes for sandwiches, stuffings, garnishes and canapés. A chapter on outdoor cooking is included, and one on cooking for a crowd, giving quantities needed for a group of fifty.

News Concerning OPA. Prentiss Brown, who succeeded Leon Henderson as Administrator of OPA, is described by *Food Field Reporter* in these words: "A defeated senator from Michigan, he is credited with being far more politically astute than the let-the-chips-fall-where-they-may Henderson. Prentiss sits well with the farm bloc, but he also believes in price control."

New Food Products and Developments. New products recently placed on the market include: frosted baked beans, sold by Friend Bros.; precooked beans, by Van Camp's, Inc.; "Diamond 29 Syrup," made from corn sugar, cane sugar, and honey, by American Molasses Co.; frozen corned beef hash, by National Frosted Foods, Inc.

Other news concerns the following: the Food Stamp Plan ends March 1. Edible fats have been banned for use in the manufacture of soaps. The number of sizes of tea balls has been reduced from 12 to 2 standard types yielding 200 and 250 balls per pound. A formula for a dried fruit bar, composed of ground dried figs, apricots, prunes and raisins, with enough honey to prevent drying out, has been given to the Army by the head of the University of California Fruit Products Laboratory to balance other elements of the field ration. Dehydrated rice pudding has recently been announced by the War Department for troops overseas. The latest estimate received on the canned food ration is that the per capita allowance will be between 35.4 and 40.3 lb. for 1943. Uniform price margins were quoted in January on coffee, all canned fish, cooking and salad oils, hydrogenated and other shortenings, corn meal, canned citrus fruits and juices, evaporated and condensed milk, pure maple syrup and pure corn syrup, flour and flour mixes.

Food Materials and Equipment. This is the title of a publication of interest to buyers and production executives in the food, sweets and beverage industries. The content is largely concerned with the technological aspects of food production, much of which is of interest to dietitians. The publisher's address is 232 Madison Avenue, New York.

Short Training Course for Food Managers. A 7-months' course designed to give technical training in food management and nutrition was initiated February 15 under the supervision of the Home Economics Department of Pennsylvania State College. The purpose of the course is to prepare men and women to carry responsibility in industrial, commercial and hospital food service units "as assistants to trained dietitians." This training is offered to high school graduates and there are no prerequisites and no age or sex limitations. The course is divided into 2 semesters of 12 weeks each and one 4-week period of industrial food service experience. The first term, which ends May 8, includes elementary nutrition, bacteriology, elementary foods, and equipment for industrial food service. The second term, beginning June 7 and ending August 28, consists of quantity cookery, advanced cooking and baking, food service administration, food purchasing, and labor management. Total cost to students, exclusive of room and board, is $193.50. Graduates of this course, the first group of which has been limited to 15 in number, will qualify as food managers and can go directly into industrial plants or commercial or hospital food service units, as assistants to trained dietitians. For further information write to Miss L. W. Drummond, Director of Home Economics, Pennsylvania State College, State College, Pennsylvania.

Special Course on Industrial Feeding Management. Owing to the increased number of workers in industrial plants, many more people are eating their meals in factories, leading to a great demand for trained persons to supervise food preparation and service in industrial cafeterias and lunchrooms. To meet this need, the Department of Institution Administration, Division of Home Economics, Michigan State College, is conducting a 6-weeks' course in three sections, the first of which started January 8, a second February 8, while a third will commence April 8. Four weeks of the course consist of actual laboratory experience in the kitchens of the Union Cafeteria and the Women's Residence Halls, and 2 weeks are given to theory of management and related topics. The outline of work includes orientation, covering opportunities in the field, professional ethics and outline of the course; theory, covering nutrition, sanitation, records, quantity food production and service, personnel management, training of employees and general management procedures; and laboratory, in which experience in the salad room, bake shop, dormitory, and soda grill, is offered. A fee of $5 is charged for the course. During the laboratory part of the course, meals will be furnished. Meals during the 2 weeks not spent in laboratory work will cost approximately seven dollars per week. Rooms in East Lansing may be obtained for approximately four dollars per week. Application for the course, which is open to all graduates of home economics or hotel adminis-

HERE'S HELP FOR RATIONING of BUTTER AND CREAM!

Heavy cream for whipping is no longer available; Uncle Sam has asked us to conserve butter, and we're all glad to do our part. Here are two special recipes we believe will help you.

One is a formula for whipping evaporated milk with Knox Gelatine. Try this delicious topping, and see how it dresses up convalescent and special-diet dishes...gives both nutritive value and eye appeal.

The other is Knox Spread...a grand-tasting spread with real butter flavor. It's easy to make with Knox Gelatine, and keeps a certain amount of butter in the diet. Try it.

Stretch ¼ lb. Butter into ½ lb. Grand Spread with KNOX GELATINE

KNOX SPREAD

1 teaspoonful Knox Gelatine — ¼ pound butter
1 tablespoonful cold water — ¼ teaspoonful salt
½ cup evaporated milk

1. Soften gelatine in the cold water.
2. Dissolve thoroughly over hot water.
3. Cut butter into small pieces and heat over hot water until soft enough to beat, but *do not melt the butter.*
4. Add dissolved gelatine and salt to the milk. Gradually whip milk into butter with a Dover (or rotary) egg beater or electric mixer until milk does not separate.
5. Add coloring, if desired.
6. Pack in dish or container and place in refrigerator until hard. Keep in refrigerator when not in use.

NOTE: For making 1 lb. spread with ½ lb. butter, follow same directions but double the ingredients called for in the ¼ lb.

For making 2 lbs. spread with 1 lb. butter, follow same procedure as above, using 1 envelope Knox Gelatine, ¼ cup cold water, 1 lb. butter, 1 teaspoonful salt and 1 large can evaporated milk.

Knox Spread gives you, without loss, the vitamins and minerals of milk and the proteins of gelatine, in addition to the food value of butter.

NOTE: Fresh milk may be substituted for the evaporated milk, in the same proportions and following same procedure (using preferably the top of a quart bottle), in which case you would soften the gelatine in milk instead of the water. In making two pounds of spread, you would use 1 pint of fresh milk.

Knox Spread is not suggested for frying, sautéing, or greasing pans. *Patent Applied For*

Whipped Evaporated Milk for Topping! Simple to make with Knox Gelatine

HERE'S HOW:

1 teaspoonful Knox Gelatine — 2 teaspoonfuls cold water
1 cup evaporated milk — 2 tablespoonfuls sugar
½ teaspoonful vanilla

1. Soften gelatine in cold water.
2. Dissolve gelatine thoroughly over hot water.
3. Important! Have milk thoroughly chilled.
4. Add dissolved gelatine to milk and whip until stiff, adding sugar and vanilla.

NOTE: When used for purposes other than a topping, omit sugar and vanilla.

Compared with whipped cream, Whipped Evaporated Milk (with Knox Gelatine) has a lower butter fat content. But it contains three times the amount of non-fatty milk solids...such as protein, lactose, minerals.

SEND TODAY

for special Knox recipe booklets, filled with good-tasting dishes to make dietitians' work easier. Write Knox Gelatine, Box 466, Johnstown, N.Y.

Knox Gelatine

Is Plain, Unflavored Gelatine...Pure Protein

If your doctor advises gelatine to build up your energy, drink Knox.
Simply empty 1 envelope in about ¾ glass of water or fruit juice, stir and drink immediately.

tration courses and persons who have had adequate experience in institution food service, must be received by the Dean of Home Economics 2 weeks preceding the opening.

Refresher Course. The Home Economics Department of the University of Illinois recently presented a refresher course for canteen teaching which was attended by home advisers from all parts of the state. Each home adviser was asked either to come in or send a home economics graduate capable of being a leader or teacher in her county, especially where no canteen program had been carried on. Red Cross chapters were also invited to send in prospective leaders and teachers. The response was gratifying and a large class enrolled. A similar course will be conducted in June for home economics teachers. The aim is to train home economics graduates to assume charge of Red Cross canteen programs, especially in communities lacking a trained dietitian.

Twenty-Hour Canteen Course. Under the direction of Fern W. Gleiser, head of the Department of Institution Management, Iowa State College, Ames, a 20-hour canteen course has been planned for the Ames Chapter of the American Red Cross, designed to meet the need for temporary feeding of men, women and children under emergency conditions. The mimeographed outline of the course has been added to the collection of material assembled by Adeline Wood at the Chicago office of the American Dietetic Association.

How to Teach an Employee. Under this title a streamlined wartime training course is provided by the Business Education Service of the U. S. Office of Education, according to *News Letter* of the National Restaurant Association. It is recommended for all those in a supervisory capacity or those in line for promotion to such responsibility. The first step toward enrollment in the course is to contact the director or supervisor of distributive education in one's city or state, which can be done through the Board of Education. Experienced directors or supervisors in the restaurant field who have received an additional 18-hour basic training course for this program will conduct the classes, which should number not less than 8 and not more than 12 members. The course will consist of 5 consecutive 2-hour lessons if there are 10 in the class, 6 consecutive 2-hour lessons if there are 12. One central restaurant is selected for the meetings and there is no charge for the course with the exception of a small fee to cover the cost of mimeographed material. The weaknesses of two common teaching methods—"telling" and "showing"—are shown through comparison with "demonstration" methods. Members of the class are required to make a "task analysis" of each job to be taught an employee. The "steps" outlined and the "key points" are then followed in demonstrating to the worker the job to be learned. After the first 2 lessons the class members take turns demonstrating how to teach a simple task to a new employee, at the completion of which the group points out the errors and omissions noted. Four teaching steps—preparation, presentation, application and testing—are emphasized throughout this training program which, it is anticipated, will prove the following: Effective training prepares a new worker for the job in the shortest possible time; labor turnover is reduced as the employee finds job satisfaction in increased interests and skills developed through training on the job; trained employees require less supervision than the untrained, since the supervisor can rely upon the former to carry much of the responsibility of the job; effective training develops interest, knowledge, skills and proper attitudes in the worker, which enables him to improve his performance to the maximum of his ability; the worker who has really learned the details of his job has more chance for advancement; ability to teach the employee develops confidence in the executive on the part of the worker; customers are best served by trained workers; and well-trained workers help to build and maintain civilian morale.

New Vitamin Table. Dietitians will welcome the second edition of a tabular summary of "representative" vitamin values, by Dr. Hazel E. Munsell, in *The Milbank Memorial Fund Quarterly* for January 1943, and which first appeared in the same publication for October 1940 and has been widely referred to ever since. As the author states, since 1940 innumerable reports have been published on the vitamin content of foods and more reliable data presented upon which to revise uncertain estimates previously made. No information has been received to date as to whether this new table will be available in reprint form, but should it be reprinted a notation to this effect will appear promptly in this JOURNAL. The values suggested in the current revision of Dr. Munsell's table, as in the earlier publication, apply only to the edible portion of the fresh food.

Planning to Meet Potato Rationing. Mrs. Christine Ryman Pensinger, supervisor, Bureau of Institutional Housekeeping, Springfield, Illinois, sounds a timely note in a recent release. With the prospect of rationing and because of rising prices of potatoes, institutions operating on a minimum budget will find it more difficult to plan appetizing meals. Mrs. Pensinger calls attention to the fact that when quantities are prepared for a thousand or more persons at a time, it is not unusual for potatoes to be peeled the day before, placed in cold water and allowed to stand overnight. Whenever this is done we know that even though the clientele or the patients receive what passes for potatoes, they are not receiving the full quota of valuable nutrients which the potato ordinarily should provide when properly prepared.

Every dietitian knows that potatoes baked or boiled in the skins retain the soluble nutrients which are leached out when potatoes are peeled before cooking. At present it is particularly urgent that more attention be given to their proper cooking in order to retain the greatest amount of food value. There is approximately thirty-five per cent waste when potatoes are peeled by hand, but this can be reduced to 15 or 20 per cent, according to Mrs. Pensinger, when potatoes are peeled in an electric potato peeler and the eyes removed by hand after peeling; but even though an automatic peeler is used, waste will be considerable if the person operating the machine is careless.

In the experimental test kitchen of the Illinois Department of Public Welfare recipes are being developed in which unpeeled potatoes can be used. The potatoes are first thoroughly scrubbed by hand, or washed in an automatic potato peeler so that they are thoroughly clean, after which all bad spots are removed by hand. The unpeeled potatoes can then be used very satisfactorily in stews, hash and soups; in fact, the average person would hardly know that the potatoes had not been peeled. Mrs. Pensinger adds that recipes for the use of these have been worked out on an institutional basis and are available to all persons desiring them.

Potatoes that are to be creamed, scalloped or fried should be cooked with the peelings on. Even potatoes to be mashed can be cooked unpeeled, then peeled and mashed. Start potatoes in rapidly boiling water to hasten the cooking process, and lessen destruction of heat-labile vitamins. "Every dietitian should realize that the problem of reducing and eliminating waste, now, is not just for the purposes of reducing costs. The avoidance of all possible waste is a patriotic duty imposed on all civilians. All food saved and

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utilized means that much more for our men in the service and our allies."

Correction. A news item in the January JOURNAL regarding the consumption of bread in Illinois state institutions mentions the amount of bread produced daily by the Army Cooks and Bakers School, Chicago, as 300 lb. This should have been stated as 3000 lb.

Notices of Judgment Against Manufacturers of Drugs and Devices. Among recent cases reported by the Food and Drug Administration of the Federal Security Agency are four concerned with the misbranding of certain "reducing" candies, which have been widely advertised in metropolitan New York papers. In each case the candy was alleged to be misbranded in that it was not effective or appropriate as an aid in reducing body weight. Among drugs which were seized because they failed to comply with official or their own standards were some "special formula tablets," "A.B.D.G. capsules," some tablets which were labeled as containing 1200 U.S.P. units vitamin A each and which contained only 67 U.S.P. units, and two other brands of tablets which contained approximately 50 per cent less vitamins A, C, and D than that stated. A "new food," consisting of ground and roasted flaxseed, was alleged to be misbranded in that certain statements in the labeling represented that the article would be efficacious in the treatment of symptoms of diabetes, stomach and intestinal ulcers, high blood pressure and indigestion, "that it would assist in keeping diabetics sugar free," and its label did not bear the common or usual name of the food prominently placed. A product claiming to be "a substitute for the secretions of the pancreas and efficacious for the relief of diabetics," was also seized. A widely advertised liquid vitamin product claiming to enrich the blood was alleged to be misbranded in that statements on an accompanying placard in the window display suggested or implied that "women normally require excessive amounts of iron to prevent the development of anemia," that the use of the compound "would benefit nerves, glands, and other organs, would promote energy, endurance, appetite, vigor, vitality, sunny disposition, and radiant complexion," and that the product was "an adequate treatment for anemia due to lack of iron;" it was also misbranded in that the designation "enrich" on the carton and bottle labels constituted a false and misleading device, and in that the statements "a dietary supplement . . . contains . . . calcium . . . as the glycerophosphates" were false and misleading in the absence of a disclosure of the material fact that the amount of calcium glycerophosphate would furnish but a small fraction of the normal calcium requirement when the article was taken in accordance with directions appearing on the label. A mineral compound, claiming that it could be "safely used as an aid in supplying minerals sometimes found deficient in the ordinary diet," that it would be "efficacious in the treatment and alleviation of conditions for which a sojourn at a health resort is customarily prescribed," that "the effect of modern diet has been to modify the normal acid-alkali balance" and, in cases of "unbalance" of the acid-alkali ratio, that the article would correct such unbalance, that "the ordinary diet is deficient in minerals, that 99 per cent of conditions of undernourishment are due to an acid condition, etc. etc.," was alleged to be misbranded and to be dangerous to health when used according to directions because of its excessive fluorine content.

A cereal product was judged to be falsely labeled regarding its vitamin content and its therapeutic qualities, having been labeled in part "The 'Vitamin Rain' Breakfast Food." It was alleged to be misbranded in that designs, devices, and statements in the labeling were false and misleading since they created the impression that it contained vitamins A, B_1, C, D, and G in consequential amounts, and that it would be effective in preventing colds and infections, in producing healthy nerves, normal growth, good teeth, strong bones, and other desirable attributes; whereas it contained no vitamins A or C and only inconsequential amounts of vitamins B_1 and G, and it would not be effective in preventing colds and infections, nor in producing healthy nerves, normal growth, good teeth, strong bones, and other desirable attributes.

Cheese Standards. Under the Federal Food, Drug, and Cosmetic Act, a hearing is announced for April 6, relating to the standards for cream, neufchatel, cottage and creamed cottage cheese, and also regarding an amendment permitting the use of sodium propionate and calcium propionate as optional ingredients.

Recent Government Rulings Concerning Food. For the record, some of the government orders affecting food which have been put into effect since the first of the year are listed below:

The Food Distribution Administration, headed by Roy F. Hendrickson, issued an order about January 1 stating that bakers must enrich all white bread. The same order also required that bakers remove all "frills" such as slicing bread, consignment selling, large variety in kinds of rolls, etc.

Late in December, Price Administrator Leon Henderson announced that all canned and processed foods would be rationed with the exception of candied fruits, chili con carne, frozen fruits and vegetables in containers over ten pounds, fruit cakes, fruit juices in containers over one gallon, fruit puddings, jams, jellies, meat stews containing some vegetables, olives, paste products (such as spaghetti, macaroni, noodles) whether or not they are packed with added vegetable sauces, pickles, potato salad, preserves, relishes, and vegetable juices in containers over one gallon.

A special order by the Director General for Operations, WPB, allows purchase of heavy cream by hospitals and other medical institutions for persons on "special diets." A physician's statement certifying the need for the cream and specifying the milk fat content and daily quantity required is necessary in order to obtain the cream.

The Cocoanut Grove Fire. In an account of this fire in the *Journal* of the American Medical Association, December 26, the following remarks appear: "The serving of coffee and sandwiches [in the Massachusetts General Hospital] by the Dietary Department and the Red Cross was valuable in sustaining the energy and morale of workers and comforting waiting relatives and friends. . . . The need for a hospital organization for the handling of emergency disasters and the collection of an ample quantity of emergency supplies is obvious. Thanks to the efforts of the Civilian Defense, we had been made 'castastrophe minded.' Owing to practice mobilization and widespread information regarding disaster management, every one performed his duties without orders. Although during the first two hours everything seemed to be in confusion because of the numbers of people scurrying about, it was obvious to those responsible for organization that every one was acting rapidly, efficiently and intelligently. . . . 'An emergency anticipated and prepared for ceases to be an emergency.'"

1943 Victory Book Campaign. Good books in good condition are requested by the Magazine and Book Publishers Committee of the 1943 Victory Book Campaign, which is sponsored by the American Library Association, the American Red Cross and the U. S. O. Popular or technical, these books will contribute to the enjoyment and education of our soldiers, sailors and marines. Give all you can spare

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FAT	3.15 Gm.	31.95 Gm.	VITAMIN D	405 U.S.P.U.	432 U.S.P.U.
CALCIUM	0.25 Gm.	1.05 Gm.	VITAMIN B_1	300 U.S.P.U.	432 U.S.P.U.
PHOSPHORUS	0.25 Gm.	0.903 Gm.	RIBOFLAVIN	0.25 mg.	1.28 mg.
IRON	10.5 mg.	11.9 mg.			

*Each serving made with 8 oz. milk; based on average reported values for milk.

and leave them at the nearest collection center or public library, is the request of those in charge of the campaign.

"Food After Fifty." Prepared by the Nutrition Committee of the Welfare Council of New York City, this pamphlet presents a list of the protective foods, namely, milk, fruits and vegetables, desirable for the adult and the aged, and also contains data on food habits which aid digestion and health, foods for daily consumption, foods easy to eat when chewing is difficult, and foods to avoid. It also offers a variety of breakfast, luncheon and supper menus, weekly orders for one person, and food sources of vitamins A, B_1, C, D, G, and niacin. At a price of three for five cents, copies of the pamphlet may be obtained from the Welfare Council of New York City, 44 East 23 St., New York.

Food Value Charts. A new set of 12 food value charts constitutes a revision of that published in 1941, prepared with the cooperation of Philadelphia nutritionists and others attached to the Division of Nutrition, Bureau of Maternal and Child Health, Pennsylvania Department of Health. Two new charts, "Protein in Common Foods" and "Niacin in Common Foods," have been substituted because of current interest in values of various meats and other high-protein foods. Many recent assays on the niacin content of foods have provided sufficient reliable information to show comparative values for this vitamin. Foods rich in minerals and vitamins available at low cost and vegetables easily grown in Victory Gardens have been stressed. All data used in composing the graphs are listed on the reverse of each chart, also figures for many other foods. The "Recommended Daily Allowances for Specific Nutrients" (National Research Council, May 1941) are also recorded on the back of each chart to help individuals and groups work out the contributions various foods make to the day's total requirement. This set of 12 charts may be obtained for 50 cents upon application to the Philadelphia Child Health Society, Room 609, 311 South Juniper Street, Philadelphia.

Dehydrated Food Industry. The January 4 issue of *Food Field Reporter* listed the companies which will participate in the dehydrated food program for 1943, which calls for production of approximately 400 million pounds dehydrated vegetables, 50 million pounds fruits, 207 million pounds soups, 516 million pounds milk, 460 million pounds eggs, and 120 million pounds meats.

"The War Worker's Lunch Box." A booklet with this title has recently been issued by the Labor Bureau, 152 West 42 Street, New York. Written by Ora Blanche Burright, secretary of the Bureau, it is the first of a series on "Nutrition for the War Worker."

Inter-Allied Food Projects. An inter-American program for increasing local food supplies has moved forward with the signing of an agreement for United States aid in expansion of food production in Paraguay. This is the fourth cooperative agreement of this nature announced by the Institute of Inter-American Affairs, an agency set up by the Coordinator of Inter-American Affairs in Washington, to cooperate with the other Americas on problems caused by wartime economic dislocations. Previous agreements were with Brazil, Costa Rica and El Salvador. In the arrangement with Paraguay, as in other similar food projects, the United States undertakes to furnish technical aid in marketing, production of livestock, dairying, forestry and other agricultural pursuits necessary for the fullest development of Paraguay's resources.

This report, which emanates from the above-mentioned Office of the Coordinator of Inter-American Affairs, adds that "Nature opportunely has provided bumper rice crops in the other Americas and thus has helped ease the wartime food shortage in some areas."

National Society for Crippled Children Annual Drive. Vivian M. Hackett, editor of *The Crippled Child*, Elyria, Ohio, has announced that the annual nationwide sale of Easter seals, proceeds of which are used in a continuous program to advance the welfare of crippled children and adults, will be conducted by the National Society for Crippled Children March 26–April 25. Among the services which this society sponsors are medical care, hospitalization and corrective treatment and education of crippled children, also programs of public education to acquaint the ordinary citizen with the dangers of crippling diseases, manner of prevention, and steps necessary for treatment and cure.

The Dietitian Overseas. Received via the Nutrition Service, American Red Cross, a letter from Irene Boelts, 298 General Hospital, University of Michigan Unit, England, contains interesting information concerning the food situation. She writes: "Dried eggs, of course, but for Christmas the officers and nurses were allowed 100 fresh eggs. We have quantities of raisins and figs, plenty of prunes and peaches and some sour red cherries. The meat supply is good . . . beets, turnips and parsnips in abundance. We use most of the carrots raw, and have occasional celery and cabbage." Miss Boelts has learned well her lessons in conservation as she "watches everywhere to see that vegetable juices, celery tops, outer cabbage leaves, etc. are all saved" and gives the following example of an after-Christmas economy meal: "I boiled the clean turkey bones and rinsed all the roasting pans for stock for soup base. I had the boys grind some left-over scrambled dried eggs and Vienna sausages and added to this chopped celery leaves. With a few dehydrated onions, some left-over turkey gravy, peas and juice, and a pailful of hominy and juice, we had 30 gallons of delectable turkey soup, from material we could and would formerly have thrown away."

Owing to her persistent thriftiness Miss Boelts has been given the name of "Salvage Sal." Since bread molds easily in the English climate, she checks all crusts and dry pieces to see that they are used up promptly and stores the bread carefully to give adequate ventilation. All fat is salvaged, as are the bones. Some of the shortages include gelatin, canned milk, baking powder, and yeast. They have received no salad oil and are therefore handicapped in their attempts to provide dressings. (Lemon crystals were used as a substitute for vinegar in cole slaw dressing.) The only real difficulty has been the problem of special diets, owing to the scarcity of necessary items of food, but they have managed to take care of these also.

It is evident from her letter that Miss Boelts and her colleagues are doing a remarkable job not only in their untiring efforts but also in their cheerful acceptance of whatever shortcomings and difficulties are encountered.

Mary C. Barnes, head dietitian, 298 General Hospital, University of Michigan Unit, England, writes: "We have a very nice hospital and an excellent kitchen, which is very large. We cook mostly by steam; however, the large bake ovens are heated by coal, and the French fryers are electric. We have an electric mixer, a potato peeler, a steamer, steam kettles (large black ones), and three walk-in ice boxes (rare in England). All meals are cooked in this one kitchen and transferred on carts through open ramps to officers' and nurses' mess, enlisted men's mess, and wards. Our food is issued to us and we use what they send, not necessarily what we want. Staples are issued every 14 days; meats 3 times a week; fresh vegetables every 5 days. We use bacon that comes in glass bottles, ham that is cured in a salt brine and packed in salt. Most of our other meats are frozen.

"Perhaps you would be interested in some things we do not have or seldom see: lemons, oranges, bananas, eggs,

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fresh milk, lettuce, ice cream, steak, bottled beverages, shrimp, chocolates, soda crackers, powdered sugar, brown sugar, grapefruit, soap flakes, Kleenex, paper napkins, and only a few newspapers. I saw about two dozen eggs last week, and how I wanted one! Powdered eggs, scrambled, are not so good but we eat them.

"We have table cloths and at present have paper napkins. I save my napkins, as many do, and take them home. They can be used to clean shoes and for many other things. I have a single room, clean sheets once a week, a blue dresser, bedspread, green draperies heavy enough to use as blackout curtains, a table, an easy chair, and a straight chair. I even have a small rug on the floor. Did I tell you that I bought a British battery radio? Electricity is 250 volts here, so we can't use our electric irons unless we have two of them wired together and we heat both irons at the same time. We now get tomato juice, beer, and two cans of peanuts besides the usual things at our post exchange.

"We are all busy but not overworked at present, but you never know what tomorrow will bring. It's very discouraging to see the damaged buildings, but it's unbelievable how the people smile and go on as if nothing had ever happened."

Dayton (Ohio) Dietetic Association has elected the following officers: president, Hannah O. Hutchinson, Dayton Dairy Council; vice-president, Helen Newcomer, Delco Brake Company; secretary, Jacqueline Briscoe; treasurer, Alice Davis.

Illinois Dietetic Association. Alice Klinger, formerly assistant to Margaret Cowden, Michael Reese Hospital, Chicago, and president of the Chicago Dietetic Association, is now on the staff of Milwaukee County Children's Home, Wauwatosa, Wisconsin.

Jean Riggs has been appointed storeroom dietitian at Michael Reese Hospital where the following students have recently completed training courses: Margie Herr, St. Theresa College, Chicago; Addie L. Erickson, Oklahoma University; Irene Meyer, State University of Iowa; Lenore Laus, University of Wisconsin; Zella Eckertort, Clark College, Iowa; Ella Wakefield, Florida State College for Women; Jean Reed, Nazareth College, Louisville, Kentucky; and Agnes Remke, Iowa State College.

Dorothy Lenfest, business manager, American Dietetic Association, vacationed in Maine, returning to work on January 18.

St. Luke's Hospital, Chicago, has installed a new cafeteria which will serve all employees and aid in the present employment situation.

Recent appointments include: Lillie Corothers, head dietitian, Evanston Hospital, to U. S. Military Academy, West Point; and Mary Burnham, former president, Chicago Dietetic Association, to Camp Hulon, as staff dietitian. Mary Jane Stringer, clinic dietitian, Mercy Hospital, Chicago, has returned to her home in St. Paul.

The state association annual meeting was held at Peoria in February.

Maryland Dietetic Association. "Current Events in the Field of Nutrition" was the topic discussed by J. Ernestine Becker at the January meeting.

Announcements of the following marriages have been received: Eleanor Schellenberg to Dr. Thomas J. O'Neill; Margaret Blakey to Mr. Sydney Cross Trimmer; and Mary M. Diener to Lieut. Arthur M. Stover.

New students at the University Hospital include Sally Cahill, Mundelein College; and Hope Hotchkiss, University of Chicago. Dorothy L. Schock, Hood College, and Mary Alice Cockrell, Texas State College for Women, are members of the training course for dietitians at Johns Hopkins Hospital.

New appointments include the following: Eleanor Wilkinson, president-elect of the state association, to State Board of Health, Delaware, as nutritionist; Catherine Bardsley, University Hospital, Oklahoma City, to City Hospitals, Baltimore, replacing Elizabeth Shamburger; Josephine Anderson, Sheppard-Pratt Hospital, to Station Hospital, Fort Eustace, Virginia; Audrey Brown, Boston Dispensary graduate, to Johns Hopkins Hospital; and Mrs. Evelyn Thomas Kefauver, University of Maryland, Angela Mason, St. Agnes Hospital, and Edith Judd, Presbyterian Hospital, all appointed to University Hospital.

The following, as members of the American Dietetic Association, have been accepted for membership in the state association: Mrs. Helen Kaylor Bowie, Western High School Cafeteria; Eleanor Cruickshank, Catonsville High School Cafeteria; Marjorie McKnight and Edith Jones, Johns Hopkins Hospital; Elizabeth Peach, Baltimore City Hospital; and Irma Lee, Women's Hospital.

Greater New York Dietetic Association. The January meeting at Presbyterian Hospital included the following subjects and speakers: "Biotin and Its Nutritional Significance," Donald B. Melville, Department of Biochemistry, Cornell University Medical College; and "Postwar Nutrition Problems," Dr. Donovan J. McCune, Babies Hospital, Columbia-Presbyterian Medical Center.

Oklahoma Dietetic Association. Administrative students in the postgraduate Administrative Dietitians Training Course, Oklahoma A. and M. College, for 1942–43 are: Gertrude Entz, Oklahoma College for Women; Glenna Marie Parkin, Utah State Agricultural College; and Thelma Lee Thompson, Purdue University.

Student dietitians enrolled at University Hospitals, Oklahoma City, January 1, were: Marion Helbing, University of Wisconsin; Joyce Proffer Jamison, University of Oklahoma; Bernice Newson, University of Arkansas and Oklahoma A. and M. College; June Popma, Iowa State College; and Bernice Cornehl, Washington State College.

Student dietitians graduating January 31 at University Hospitals were: Catherine Bardsley, appointed to the Baltimore City Hospitals; Opal Howard, appointed to University Hospitals; Myra Barberousse and Carol M. Swain.

Sister Grace Marie, a graduate of the 1942 training course, St. Anthony's Hospital, Oklahoma City, has been appointed to the dietary staff of Sacred Heart Hospital, Le Mars, Iowa.

Recent appointments include: Mary Alice Bolt, College High School Cafeteria, Bartlesville, to Central State Teachers College, Edmond, in charge of feeding air cadets in training; Rachael Johnstone, formerly assistant professor of household science and assistant to the director of the College Foods Units, Oklahoma A. and M. College, now chief dietitian for an Army Base Hospital in foreign service; Irene Chapman, postgraduate Administrative Dietitians Training Course, Oklahoma A. and M. College, 1941–42, now dietitian, Northeastern State Teachers College, Tahlequah; Mrs. Natalie Northcutt Rockett, postgraduate Administrative Dietitians Training Course, 1941–42, now assistant dietitian at the cafeteria, Oklahoma City Air Depot.

Philadelphia Dietetic Association. The October meeting at Presbyterian Hospital was conducted by the Administration Section. Lila G. Hainer, assistant professor of home economics, Drexel Institute of Technology, was chairman of a round-table discussion concerning plans for using volunteer help in dietary departments.

At the November 10 meeting, Mrs. Martha A. Hunscher, chairman, Community Nutrition Section, presented a program entitled "On the Nutrition Front" with the following speakers: Mr. Ivan Miller, *Food Industries*, "Foods of the

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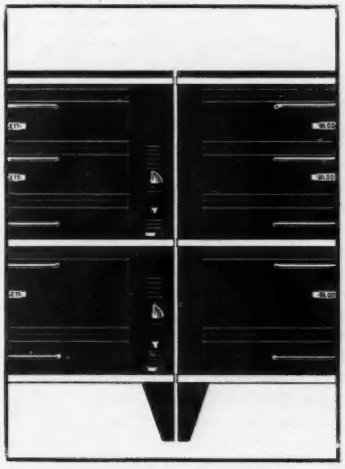

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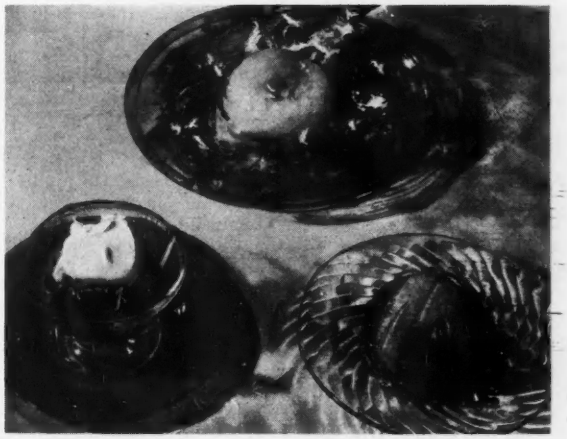

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Future and Their Nutritive Values;" Mrs. Joyce O'Neil Watts, home economist, Department of Defense Nutrition, Westinghouse Electric and Manufacturing Company, "Woman's Part in Winning the War"; and Mable Lober, supervisor of Rehabilitative Service, Department of Public Assistance, who explained the scope of public assistance in Philadelphia and the nutritionist's role in this work.

At the December meeting at the Philadelphia General Hospital, Mrs. Ivalclare Howland, associate professor of physical education, Pennsylvania State College, spoke on "Ten Years Off in Less Than a Minute," detailing her rules of body mechanics for proper posture, and Dr. Helen S. Mitchell discussed "Nutrition Strides in Washington."

Eleanor Bigelow, Esther Venner and Mrs. Hunscher are serving as members of a subcommittee on public welfare for the Council of Social Agencies, "to examine the basic grant of general assistance in terms of present cost of living in Philadelphia; to compare these grants with minimum needs to maintain minimum adequate standards of health, nutrition and welfare; and to examine to what extent dietetic and nutritional needs of individuals and families can be met in terms of what the actual cost of food and the basic necessities are in Philadelphia today."

The Community Nutrition Section of the association has revised the method of collecting food prices and compiled the average food costs in Philadelphia during the first week of February. Volunteers for social agencies requesting these data assisted in the work.

Betty Brewer, Mt. Sinai Hospital, has been appointed chairman of the Diet Therapy Section for the remainder of the year, owing to the fact that Judith Judd, former chairman, has left Philadelphia. Miss Brewer directed the Diet Therapy Section meeting January 12.

At the February 9 meeting, Ardenia Chapman, professor of home economics, Drexel Institute of Technology, spoke on "Consumer Education Problems in Wartime."

Mount Sinai Hospital 1942 graduates have received appointments as follows: Tybell Wittenstein, therapeutic dietitian, Jewish Hospital, Philadelphia; Margaret Johnson, assistant dietitian, Memorial Hospital, Houston, Texas; Marion Charvat, therapeutic dietitian, Ohio Valley Hospital, Steubenville, Ohio; Lorraine Konesky, Army dietitian, Station Hospital, Jackson, Mississippi; Katherine Russell, therapeutic dietitian, Mount Sinai Hospital.

Other recent appointments include the following: Miriam E. Gaige, Presbyterian Hospital, to Jewish Hospital as first assistant administrative dietitian; Maxine M. McCowan, St. Luke's and Children's Medical Center, to Osteopathic Hospital as head dietitian; Neva Betz, Abington Hospital; Evelyn Girard, Babies' Hospital; Mildred Spain, Bozeman, Montana, as administrative dietitian, Temple University Hospital; Lillian Straka, first assistant, Marie Marince, therapeutic dietitian, and Rosemary Rogers, teaching dietitian, St. Luke's and Children's Hospital; Mrs. Albert Boegner (Alice Schlatzer), assistant dietitian, Jewish Hospital. The present dietary staff at Pennsylvania Hospital for Mental and Nervous Diseases includes: Christina Austin, head dietitian, and Mrs. Lael Kelly and Sara Jane Witner, assistant dietitians. Kathryn Williams, Jewish Hospital, is now dietitian, West Town School, West Town, Pennsylvania.

Mount Sinai Hospital, Philadelphia, is offering a six-months' course in hospital dietetics preparatory for Army training apprenticeship. Betty Brewer, formerly therapeutic dietitian, is now instructor of dietetics. Hazel Chapin has accepted an appointment at Veterans Administration Facility, Lyons, New Jersey.

Recent marriage announcements include: Frances Miller, dietitian, Provident Mutual Life Insurance Company, to Mr. Joseph Kowalski of the Coast Guard; Mary Ashelman, formerly of Pennsylvania Hospital for Mental and Nervous Diseases, to Mr. Norman Wood. Mr. and Mrs. Wood are now living in Wilmington, Delaware.

Fannie Flescher, graduate of Wayne University, Detroit, is now student dietitian at Jewish Hospital. Florence Unash, formerly food administrator, Philadelphia State Hospital, is now attached to the Signal Corps Station in Philadelphia. Mary Sterling Tyson, head dietitian, St. Luke's and Children's Hospital, leaves soon to join the Waves. Frances Selze, formerly metabolic dietitian, Philadelphia General Hospital, is now dietitian at Station Hospital, Army Air Force Training Center, Atlantic City. Ann Stapler, formerly dietitian, Abbott's Dairy, is now state nutritionist for Michigan.

Tennessee Dietetic Association. Officers for 1943–44 are: Honorary president, Fairfax T. Proudfit; president, Elizabeth D. Terrill, Chattanooga; president-elect, Maniza Moore, Nashville; vice-president, Bess Woodrum, Knoxville; secretary-treasurer, Nellie Ruth Ward, Chattanooga.

Dietitian graduates of Vanderbilt University Hospital training course in 1942 are in the following positions: Dorothy Bowie, Madison College, assistant administrative dietitian, Ohio Valley General Hospital, Wheeling, West Virginia; Gladys Blackwood, Salem College, assistant dietitian, University of Georgia Hospital, Augusta; Mary Helen Hagaman, Virginia Polytechnic Institute, assistant dietitian, Cabarrus County Hospital, Concord, North Carolina; Cynthia Patty, Texas State College for Women, assistant dietitian, State Sanitorium, Sanitorium, Mississippi; Maureen Jones, University of Colorado, who was married to Dr. J. Lacey Hopson, is now assistant dietitian, Children's Hospital, Boston; Edith Hinshaw, Women's College, University of Alabama, assistant dietitian, Presbyterian Hospital, Charlotte, North Carolina; Alberta Kalakowsky, Simmons College, assistant dietitian, Boston Lying-In Hospital; Katherine Ogilvie, Maryville College, and Corrine Rucker, Baylor University, Dietary Staff, Vanderbilt University Hospital. Gladys Darling, Georgia State College for Women, has announced her marriage to Dr. Gerald Kinzel who is stationed at Fort Bragg, North Carolina.

The following student dietitians are enrolled at Vanderbilt University Hospital this year: Virginia Jones, Woman's College, University of North Carolina; Dorothy Temple, State Teachers College, Framingham, Massachusetts; Mary Lipscomb, Winthrop College, South Carolina; Katherine Hickman, University of Idaho; Eloise Rogers, Georgia State College for Women; Lillian Lowe, University of Tennessee; Jean Harlan, Iowa State College; Bettie Chapman, Texas State College for Women; Margaret King, University of Alabama; Andrea Lee Stabler, University of Alabama.

Hazel Bolton, formerly dietitian, T. C. Thompson's Children's Hospital, Chattanooga, is now with the Vanderbilt University Overseas Unit being trained at Camp Forrest. Rebecca Roseberry, formerly chief dietitian, Erlanger Hospital, Chattanooga, is now head dietitian, Station Hospital, Air Base, Amarillo, Texas.

The annual state meeting will be held in Nashville in April.

News From Our Advertisers and Exhibitors. A new booklet of recipes for 100, prepared by Mary Pearl, has been issued by the *Maltex Company*, Burlington, Vermont. Several methods of using this product, which is unrationed, are given in such dishes as sweet potato croquettes, meat loaf, fried cereal loaf, date bread, coffee cake, etc. Miss Pearl calls attention to the fact that most of the ingredients can be obtained without difficulty.

Betty Stuart Smith, consumer service director, The Public Health Committee, Paper Cup and Container Institute, writes that "sanitary single-service paper cups and containers now do a tremendous war job in the feeding of both our armed forces and industrial workers." A recent mailing from the Institute includes a "Paper Cook Book" with recipes for lunch-box lunches, frozen desserts, and egg, milk, and fruit drinks. Many helpful suggestions on the

• "Whole-grain or enriched bread". . . "vitamin-rich spread"—if you are a leader in your community in promoting the National Nutrition Program, you know the importance of these two items. Not just for their own contribution of food-energy and vitamins, but for their ability to team up with the other recommended foods and make them more attractive!

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Nucoa's fine flavor is *always the same,* for Nucoa is made under laboratory control. 102 tests daily assure its invariable quality. And Nucoa always tastes fresh, for it is freshly made the year round—never held in storage.

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3. *Do you know how nutritious margarine can be? Remember these facts about NUCOA!* Every pound of Nucoa furnishes as much food-energy as a pound of butter—3,300 calories. It is equally digestible—96%. And every pound of Nucoa contains not less than 9,000 units of VITAMIN A! It does not vary, winter or summer.

In figuring budget diets, the economy of Nucoa and its *year-round VITAMIN A uniformity* are very great advantages.

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use of paper containers are included in the booklet. A reprint of the article on use of paper products for all food service in the Los Angeles County General Hospital is available from the *Cup and Container Institute*, 1790 Broadway, New York, also the booklet described above and another entitled "There Are Four," concerning types of paper containers.

"A Canned Foods Text Book" is the title of a new booklet prepared for dietitians and home economists by Mary Hale Martin, director of home economics, *Libby, McNeill & Libby*, Chicago. Complete information is presented on the subject of canned foods, including the background of their growing and where they are grown, the harvesting, marketing, and the canning process. Attractive illustrations tie in with the interesting and carefully documented story of the canning industry. Full details are included on the manufacture of tin and glass jars, laboratory control of canned products, the mechanics of canning and practical details about the care and use of canned foods. All this is followed by data regarding specific canned products marketed under Libby's brand, namely, varieties, style of (their) pack, uses, food values and container sizes. More than 50 products are thus described. Final details are concerned with menu planning, using canned foods and a list of questions and answers. This is one of the most practically helpful compilations of its kind yet received.

Material recently received from the Research Department of *H. J. Heinz Company*, Pittsburgh, includes the *Nutritional Observatory*, a quarterly journal, copies of which are gratis to physicians, nutritionists, and dietitians. The January issue contains an excellent summary of the soldier's diet, and discussions of the thiamin content of the American diet and the nutritive value of vegetables including some products little used in this country. Another brochure lists excellent salads for every day in the week. A new chart, entitled "A Guide to Better Nutrition," as its title implies, covers the essential nutrients, their functions and sources, and gives the specific function and important sources of the vitamins and minerals. The second edition of the Heinz *Manual of Foods* was also released in January 1943. This includes a table on the composition of foods (edible portion) as well as a table on the composition and energy value of Heinz products. The Heinz nutrition charts mentioned in an earlier issue of this JOURNAL are also available.

Dr. Lela E. Booher has recently been appointed chief nutritionist of *General Mills, Inc.*, with headquarters at Minneapolis. Dr. Booher, who is well known to dietitians and nutritionists, took her undergraduate work at Ohio State University, and received her master's degree at State University of Iowa, and her Ph.D. at Columbia University under Dr. Henry C. Sherman. She was an instructor in biochemistry for two years in New York Medical School, research assistant in chemistry for four years at Columbia University, biochemist at St. Luke's Hospital in Cleveland for one year, instructor in chemistry at Columbia University from 1930–36, and chief of food and nutrition, Bureau of Home Economics, U.S. Department of Agriculture from 1936–41. For the past year she has been director of the Institute of Nutrition at the Children's Hospital, Milwaukee, where she engaged in research in human nutrition. Dr. Booher represented the United States at the Geneva Conference on Nutrition of the League of Nations in 1938. She is a member of a subcommittee of the Food and Nutrition Board of the National Research Council which proposed the now accepted average daily allowances, commonly termed the "yardstick of good nutrition."

Starting January 10, the *Westinghouse Electric & Manufacturing Company*, Mansfield, Ohio, re-entered the radio entertainment field featuring John Charles Thomas as singer and master of ceremonies. Supporting Mr.Thomas is Mark Warnow's orchestra of 38 pieces and the Lynn Murray Chorus of male voices. Commercial announcements are presented in the form of dramatic stories by John Nesbitt, prominent in radio and motion picture work. The program is broadcast over the NBC network Sunday afternoons at 2:30.

Prepared under the direction of Bertha E. Nettleton, *General Foods Corporation*, 250 Park Avenue, New York, offers free upon application a variety of informative data on food products, including a chart showing tissue-building and energy factors of various foods, a plan for the day's choice of food, low-carbohydrate diets, new desserts, and quantity recipes for cookies, waffles, nut breads, etc.

Material contained in "How to Make the Most Out of Your Hotpoint-Edison Electric Kitchen," prepared by *Edison General Electric Appliance Co. Inc.*, is particularly timely just now. Among the points stressed are: Keep demand down, for a high "demand charge" is a proof of inefficient operation. Use automatic controls wherever possible. Make a habit of turning switches to "low" when any device is idle. Use no more heat than is necessary. Make a habit of utilizing the stored heat in your equipment. Use specialized equipment—eliminate as much surface cooking as possible. Constant supervision must be exercised to see that the precautions are carried out. An operating schedule for efficient kitchen operation is included, in which heating times for various appliances are indicated, based on a commercial food service establishment serving 16 hours daily. In commenting on this booklet, *Institutions* mentions that for large organizations, a conference between the chef, the engineer, and a power company representative can usually formulate a time schedule for the electric cooking equipment which will materially reduce current costs by diversifying the cooking demands with those of other equipment. Power engineers have pointed out that one can readily reduce the demand and the total net bill by maintaining a schedule for turning equipment on and off, which will prevent more than is absolutely necessary being on "high" at one time, and will at the same time save energy which can be utilized in the war production program.

To add variety and interest to wintertime menus, six tested recipes of salads, cookies and protein dishes have been prepared by Millicent Atkin, director of the Home Economics Department, *Irradiated Evaporated Milk Institute*, Chicago. The salads present an inviting arrangement of appetizing raw vegetables, fruits and nuts blended with eggless mayonnaise. The oatmeal and fruit cookies are described as crisp and fragrantly spicy, and the protein dishes, one of which may be used as an alternate for meat and one as an "extender," will undoubtedly provide satisfactory items for meatless and meat-short menus.

Mead Johnson & Company, Evansville, Indiana, writes that contrary to rumors, the potency of Mead's Oleum Percomorphum 50% with viosterol remains the same; namely, 60,000 vitamin A units and 8500 vitamin D units per gram.

A new meat recipe book, called "Victory Meat Extenders," has just been published by the *National Live Stock and Meat Board*. It contains a very useful guide for figuring how much meat to purchase for the various family-size meat extender recipes in the book. These recipes utilize the normally cheaper cuts of meat and also the variety meats. Now that even these are not very cheap nor plentiful the book will prove useful if the housewife is advised to make out her shopping list with several alternatives in mind, for the recipes cover a wide variety of meat and meat products. The book is presumably furnished free on application to the National Live Stock and Meat Board, 407 So. Dearborn St., Chicago.

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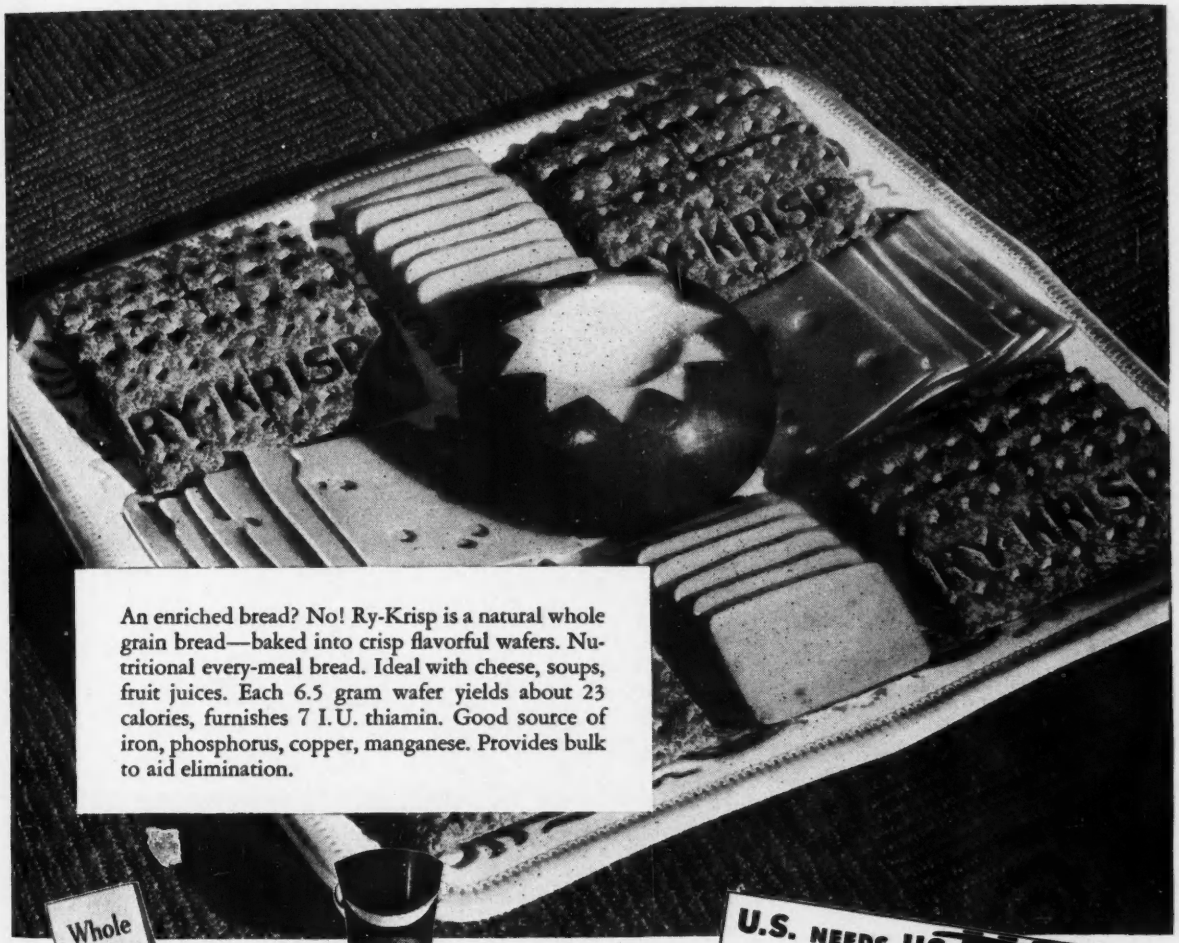

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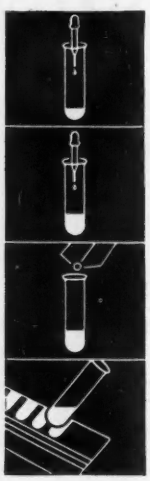

(2)
10 drops water

(3)
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(4)
Allow for reaction, then compare with color scale.

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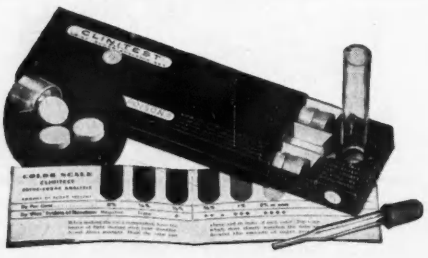

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